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THE

VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

EDITED BY

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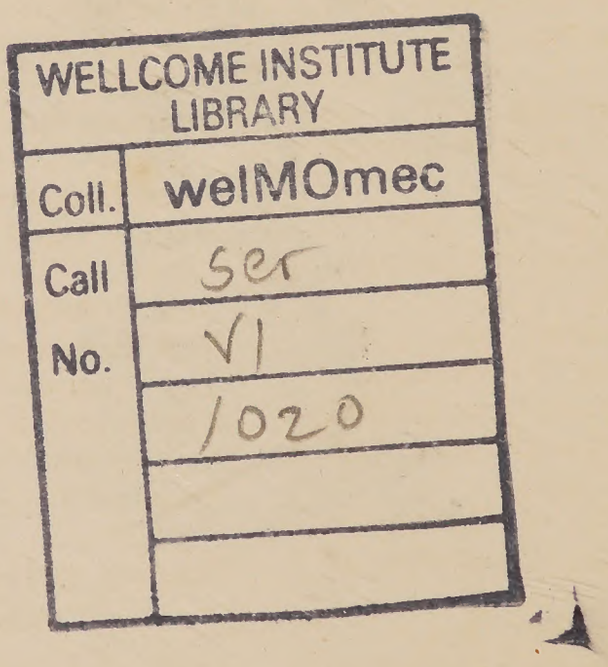
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THE VETERINARY JOURNAL

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JULY, 1882.

MELANOSIS PRODUCING PARALYSIS.

BY A. SPRUELL, F.R.C.V.S., DUNDEE.

THE perusal of Mr. Ross's paper on Melanosis, read before the last meeting of the Irish Central Veterinary Medical Society, reminds me of a very remarkable case of that disease which occurred in this neighbourhood about two years ago. The history of the case, so far as known to me, is very brief, but from the excessive amount of melanotic deposit displayed, it may be of some interest to the members of the profession, and as I have never seen or heard of any other similar case, it may possibly also be regarded as worthy of record in the pages of the Journal.

About two years ago, I was called upon by the agent of one of our large railway contractors to go to a neighbouring town to see an aged white cart mare which had lost the power of her hind-quarters, and which had been under treatment by the local veterinary surgeon for some time without any apparent signs of success. I duly arrived at my destination, and on consultation with my friend, the veterinary surgeon in charge of the case, I found that she had been treated in the usual way for cases of paralysis—that is, by physic, followed up with nervine tonics, and accompanied by the application of mustard to the spine, from the withers backwards; she was also put into slings, and was in them when I saw her. I had her taken out of the slings, to see to what extent her powers of locomotion were affected, and was surprised to see that she was very far gone indeed, the utmost

care being necessary to prevent her from falling during the act of taking her as far as the stable-door and back again. This being, however, successfully accomplished, I made a careful examination of the spine from without, and also from within *per rectum ;* and having made inquiry as to the time that she had suffered from weakness of her hind limbs, and finding that no one could attribute the ailment to any severe exertion or ill-usuage she had undergone, I arrived at the conclusion that melanosis was the sole cause of all her trouble. My brother practitioner could not quite agree with me on this point, as he had never heard of such a thing before ; no more had I, but such was the state of matters in the case before us that I, for my own part, felt no doubt on the subject.

Externally, the root of the tail, the perineum, vulva, and all the adjacent regions extending downwards between the legs as far as the groin, was one complete mass of melanotic tumours, varying in size from that of a pea, or even smaller, to huge masses of about five to six inches in diameter. The attempt to make an examination *per rectum* was with difficulty carried out, owing to the roof, floor, and sides of the pelvic cavity being so closely studded with tumours of a similar nature to those situated externally, as to almost prevent the passage of the hand. By dint of a little care and perseverance, however, I at last managed to get as far forward as the length of my arm could reach, and as far as I could feel on both sides of the posterior aorta, and indeed apparently also within or around it, the masses of melanosis, from three to four inches in diameter, were so closely packed that I felt convinced that we had to do with a case of occlusion of the aorta, either from deposit within the coats of the aorta itself, or from pressure upon them from without. Along the course of the aorta, and possibly deposited within the lymphatic glands of this region, the tumours had just sufficient clear space left between them to mark out their margins ; in several parts, however, where they were largest they had the feel of being piled up one on top of the other, till the effect produced became such as I have endeavoured to describe. I felt all the more convinced of the correctness of my diagnosis by the fact that the hind legs were much swollen, and the circulation,

both arterial and venous, was evidently of a very sluggish character. Although we could not quite agree as to the cause of the paralysis, we were equally convinced of the hopelessness of the case, and being at one on this point, we forthwith recommended the destruction of the animal.

This was, I understand, duly carried out a day or two after, but as the order had to come from the head office, and a report had first of all to be sent there, and as the case was about twenty miles from home, I am sorry to say that I did not personally have an opportunity to make a *post-mortem* examination, and I understand that my confrere did not consider it worth his while to do so.

STOMATITIS PUSTULOSA ACAROSA OF THE HORSE.

BY RICHARD W. BURKE, M.R.C.V.S., A.V.D., WOOLWICH.

THIS disease is unknown in veterinary literature. Professors Eggeling and Ellenberger* have certainly described a disease which they were pleased to designate "Stomatitis Pustulosa Contagiosa" of the horse, and in which they noticed the presence of particular *fungi*, but, unfortunately, they were "undecided whether they had a high or a low form of fungus to deal with." The affection with which I am now concerned, notwithstanding that there is no very clearly defined line of demarcation, otherwise, between it and that of the authorities I have just mentioned, is thoroughly unique of its kind, in that its development is due to the presence of an indubitable *Acarus* (*vide* fig. 1).

Although the last named authorities have distinctly sketched the clinical history and experimental results of the disease they interpreted, a mere cursory notice has been bestowed on the microscopic feature of the fungi described by them. And this last I consider of the very first importance in the matter of its diagnosis, as a faithful record of the morphological characteristics of the fungi, etc., becomes indispensable in the aiding of future investigation. We have observed how the onward march of

* VETERINARY JOURNAL, 1878, p. 293. Translated from Archiv für Wissenschaftliche und Practische Thierheilkunde.

science has necessitated a combination of the study of pathological anatomy with that of clinical medicine, and the day has now certainly arrived when to the study of pathology we must assuredly add that of the use of the microscope in all future diagnoses of disease.

Although the salient characteristics of the disease which Eggeling and Ellenberger considered from a clinical point of view, seem to me to indubitably correspond with those of the case I had under my notice, yet, etiologically, I feel compelled to draw a robust difference between the subjects of our respective observations, as mine is a solitary instance of the disease due to

FIG. 1.

Posterior portion of an acarus, as seen in a tumour removed from buccal epithelium of a horse. ×700 (magnified $\frac{1}{12}$.)

an *Acarus* hitherto recorded. These Acari I have shown to the other veterinary surgeons in this garrison, having demonstrated them under the microscope; and we are none of us disposed to doubt the identity of these creatures, as being genuine specimens of either the one or the other of the varieties of the equine Acarus. The reader, however, may satisfy himself of the truth of this by study of the sketches appended.

The subject of the disease was a mare attached to the Riding Establishment at Woolwich, and under treatment of veterinary surgeon, R. S. Sartin, A.V.D., by whose kind permission she was, at my request, placed at my disposal, in order that I might study the nature of the symptoms she manifested. And I must

here accord to veterinary surgeon Sartin, the exclusive merit of having disclosed the clinical diagnosis of the case, inasmuch as he compared it to that described by Eggeling and Ellenberger; for myself, I but accomplished an analysis of the case microscopically, wherein, however, I have noticed one fundamental difference between it and that form of disease Eggeling and Ellenberger especially studied. A slight description of the case under consideration might therefore prove to be not without interest. The labial and maxillary buccal mucous membranes, the dorsum and under surface of the tongue, and the skin of the corona labialis of our patient were occupied by numerous small multiple epithelial tumours which, as they softened, soon gave place to so many little ulcers, possessing a highly injected appearance at their floor, their margins in places being coated over with a yellowish-looking exudate; but the ulcers themselves were disposed to heal up readily, and to be followed by a fresh crop of tumours identical with that preceding, which in like manner occasioned in its turn ulcers identical with those preceding. One of the most common characteristics of these tumours was their brief duration, and the tendency they exhibited of undergoing rapid degeneration—indeed, they were doomed to almost immediate destruction; for no sooner did they form than they were replaced by ulcers. These latter seldom exceeded in size a large pea or bean; while where they had become confluent, ulcers of the size of a four-penny piece and larger were ultimately visible.

The tumours may be described as little cell-conglomerations, due to some abnormal stimulus, the result of animal parasitic action located in certain parts of the buccal epithelium of the horse, interfering with the regularity in the occurrence of ordinary phenomena, leading to an upheaval of the cells in a disorderly confused fashion, and constituting what is pathologically known under the generic term of *Tumour*. Again, they may be described as abnormal epithelial excrescences fortuitously developed upon the surface of pre-existing normal epithelium; but if we examine the same microscopically, that seemingly unknown cause of their development becomes a known one in the presence of unequivocally well formed *Acari*. The difficulty experienced by Eggeling and Ellenberger in accounting for the contagiousness

of the disease they described is, in this instance, surmounted. Acari and tumours stand as cause and effect. The proneness of the tumours to early destruction is due, first, to the fact that they are made up for the most part of cell elements, *i.e.*, they are almost exclusively cellular in their constitution ; second, to their speedy development ; thirdly, to a want of adequate nutrition in them. Fatty, and even purulent degeneration, replace what was once an absolute tumour, however insignificant in size, by an inevitable ulcer, the principal characteristics of which are a hyperæmic base, smooth edge, and a proneness to early repair.

There can be no two opinions as regards the manner of inception of the tumours in the mouth of the horse, having in view the part played by these same *Acari* in the disorder well-known as "Mange," and occurring on the dermic surface. We are, moreover, acquainted with the action of the *Sarcoptes cati* in producing inflammation and ulceration of the *cornea* in the cat. Indeed the tumours and Acari found to be associated with them, may verily be said to stand in the relation of cause and effect, the one to the other. Bearing in mind the destructive action of Acari on the skin-surface, I have, and I think not erroneously, ascribed the production of the tumours on the buccal mucous membrane of the horse in this disease to their agency. These Acari, therefore, show to actual demonstration the apparently occult cause of the tumour development I have striven to describe.

There were no appreciable constitutional symptoms, so far as I could ascertain, associated with the inception and development of the consecutive series of tumours and ulcers that I have above attempted to delineate. Further, there was no implication of lymphatic glands ; but a certain amount of œdema of the lips, in conjunction with considerably increased salivation, decidedly existed, and actively manifested its presence.

Dr. Beale has observed :—"It is beyond the power of language to describe the characters of many structures in such a way that their appearance could be reproduced in the mind of another ; and even if this could be done, so wonderfully delicate and minute are the observed differences in many cases, that an attempt to classify and arrange our observations would seem to

be at present hopeless, and must become more hopeless in proportion as observations multiply. The different meanings, which different persons attach to words and phrases, give rise to another difficulty in an attempt to collate and deduce inferences from the observations which have been made. It, therefore, seems to me that all advance in our knowledge of structure really depends upon accurate copies of the objects being made.

FIG. 2.

Showing legs of an acarus, with fungi, epithelial cells, oil globules, and pus corpuscles, the contents of a tumour removed from the buccal epithelium of a horse.

In this way alone can the work of the present generation be useful to that which succeeds it."* It is clearly unnecessary, then, for me to do more than to simply submit my sketches from the original objects to the notice of future observers, leaving it for them to contrast or assimilate the structural similitudes of the little tumours peculiar to the disease described, and at the same time the morphological characteristics of the Acarus concerned in their production. My sketches, therefore, are herewith

* "Microscope in Medicine," by Lionel S. Beale, pp. 33, 34.

appended, to which I will add but a few short explanations, so as to more thoroughly ensure a just conception of them.

The fully formed Acarus, of which fig. 1 is the best illustration, was oval shaped, being considerably wider posteriorly than anteriorly, and having a triangular head, and four legs on each side, or eight in all. Each leg presented four articulations. Other minor peculiarities of conformation will be better studied in the sketch itself than through the means of any verbal description.

Fig. 2 represents a multum in parvo representation of the structure of any one tumour taken as a whole. It shows the legs of an Acarus (body of which has been destroyed, doubtless, by the pressure of the cover-glass); some form of fungus; numerous epithelial cells; and oil of globules and pus corpuscles resulting from the disintegration of the latter.

Fig. 3 represents a young Acarus as found in a similar tumour removed from the buccal mucous membrane of our patient; *a* and *b* doubtless indicate the future legs, now *une anomalie* in its structure.

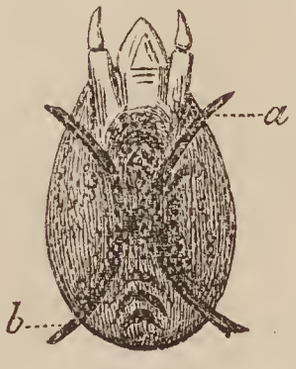

FIG. 3.

A young acarus, found in a similar tumour removed from the buccal epithelium of the horse. *a* and *b* represent the future legs of the full-grown acarus. × 200.

FIG. 4.

Probably the embryo stage of the acarus. Found in the same tumour as Fig. 3. × 700 (magnified $\frac{1}{12}$.)

FIG. 5.

Probably the embryo stage of the acarus. Found in the same tumour as Fig. 3. × 700.

Figs. 4 and 5, highly magnified, seemed to me to be probably the embryo state of the Acarus above described.

I would here note the great liability to disappointment that is incurred in the search for Acari in the tumours we have just considered. In illustration of this, I may remark that in many fresh slides I have altogether given up as hopeless the idea of discovering them, but that, on a subsequent occasion, I have on examination found them to possess some one, others two, and others again three of these creatures, with perhaps some oval bodies resembling the embryo stage of the same. Again, some few refused to discover any to the most careful scrutiny, though continued for many consecutive minutes of each sitting at the microscope. This, however, must prove no discouragement, and should not damp the ardour of succeeding observers, as in every branch or department of the science of the microscope, the most earnest, indefatigable, and tedious labours will often lead to disappointment and be unfruitful of results. It is only to those who hope against hope, who persevere in the teeth of seemingly insuperable obstacles; in short, it is only to those who *wait* that success will eventually come, fully compensating for the labour spent, and replete with results of value and interest.

I have treated this subject, with the substantial whole before me, from the point of view of a micro-pathologist, although certain clinical facts, being inseparably connected with a thorough consideration of the disease, could not with propriety have been passed over, and this is the only apology I offer for their being joined in this place.

I have refrained as far as possible from leading my readers into any unnecessary details of the case, and I trust also that there will be no more technicalities found here than the merest tyro in general pathology may understand.

POISONING BY ACONITUM NAPELLUS.

BY CHARLES MORGAN, M.R.C.V.S., NONINGTON, KENT.

ACONITUM NAPELLUS is cultivated in many gardens in this locality, being hardy and a handsome, free-growing flower.

The following case, which came under my immediate notice, I think worthy of note.

Subject: a bay cob; had been out several hours in perfect health, and was seen, while standing beside a fence, to bite off four pieces of the flower, which had just commenced blooming.

The owner witnessed the occurrence, and could have taken the pieces out of the animal's mouth; but thinking there was no danger, allowed them to be masticated. He noticed, almost immediately, an increased flow of saliva.

The horse went about a mile, and was then brought to my house and taken out of harness.

I saw him in about two hours. The symptoms were frequent violent attempts at vomition, almost complete loss of power, reeling about and falling, pulse imperceptible, and purging commencing.

Repeated doses of Ol. Lini. were administered, with stimulants. The first dose stopped the efforts to vomit. Purging was very free for about twelve hours, when the patient gradually recovered, and in two days was well enough to walk home, a distance of four miles.

FERRUM DIALYSATUM.

BY J. DOWLING ALLMAN, PHARMACIST.

SINCE I introduced dialysed iron in combination with quinine, it has formed an important therapeutic agent in veterinary practice. Not being thoroughly understood what the chemical properties of dialysed iron is, this article is written as a supplement to my previous one, which has already appeared in the columns of this Journal. The substance, dialysed iron, or peroxy-chloride of iron, is prepared in the following manner:— Dilute 10 parts of solution of ferric chloride with cold distilled water, precipitate, it will dilute (1·10) water of ammonia; wash the precipitate with cold water, and add it, while still moist, to 11 parts of solution of ferric chloride contained in a sufficiently capacious flask. Put it aside one day, frequently agitating,

until the ferric oxide is dissolved. Filter if necessary; transfer the solution to a parchment dialyser, which must be filled so that the surrounding water reaches to one-third of the height of the within-contained solution. Set the apparatus aside in a cold place for about ten days, and remove the outer liquid occasionally, replacing it by distilled water. As soon as a small sample of the solution removed from the dialyser ceases to produce cloudiness with silver nitrate, the solution is poured out into a beaker and its specific gravity taken, which should be 1045 to 1046; if found to be too dilute, it must be concentrated by evaporation; otherwise it must be diluted. One hundred parts of this solution contain five parts of anhydrous ferric oxide. Supposing the specific gravity of 240 parts of the solution had been found to be 1018, this would correspond to a percentage of two parts of anhydrous ferric oxide. Then by saying, $5 : 2 :: 240 : x$, we find x to be 96; that is, the 240 parts of specific gravity 1018 must be evaporated to 96 to contain 5 per cent. of ferric oxide; or, which is the same thing, to have the specific gravity 1045. This evaporation must be conducted very carefully, by heating a portion of the solution (about 90 parts) in a shallow capsule on the water bath, at a temperature not exceeding 60° or 70° C., stirring constantly with a glass rod, and preserving the original height of the liquid by the gradual addition of more of the solution. Another process, which, however, yields a less pure product, is the following:— Dilute 86 parts of ferric chloride solution with 800 parts of cold distilled water, precipitate it with dilute (1·10) water ammonia, collect the precipitate on a strainer, squeeze it, wash it as quickly as possible with cold distilled water, and transfer it into a large flask containing 10 parts of solution of ferric chloride, diluted with 40 parts of distilled water. Set aside for four days in a cold place, and shake frequently; then add to it moist hydrated ferric oxide prepared as before stated from 25 parts of solution of ferric chloride, set again aside for three or four days, occasionally agitating; dilute the solution with water, so that after filtration it amounts to 520 to 525 parts; if too dilute, it must be carefully evaporated to that weight. This solution has the same specific gravity and percentage as the first-mentioned one.

Iron prepared in this manner has decided therapeutic value over any of the other ferruginous preparations. It does not cause constipation of the bowels, or disturbance of the digestive or nervous system—an important matter to bear in mind where iron is indicated. It is said that dialysed iron is an antidote for arsenical poisoning, for which purpose it is recommended to replace the hydrated sesquioxide on account of its convenience of administration, and the fact that it requires no previous preparation.

FRACTURE OF THE NAVICULAR BONE.

BY S. W. WILSON, M.R.C.V.S., A.V.D., 3RD HUSSARS, ALDERSHOT.

I HOPE the accompanying history of a case of fracture of the navicular bone may be considered worthy of insertion in the VETERINARY JOURNAL. It was the first case of the kind I have actually had under my own treatment, and it was very interesting to me.

The animal was a Hungarian—a troop-horse in the 3rd Hussars (G. 15). On November 22nd, 1881, on the march from Norwich to Aldershot, the horse suddenly made a violent stumble, very nearly coming on to his knees. The rider declared that he put his foot on a stone. The accident caused great lameness in the near fore-leg, and the horse had to be led the remainder of that day's march. On the following day he was also led; but, after going some sixteen or eighteen miles, he was so lame that he was left at the nearest billet (in Edmonton). He was here attended by Mr. Stanley, M.R.C.V.S., of Edmonton, who pronounced it a case of navicular disease. I first saw the animal on December 1st, 1881, and quite agreed with Mr. Stanley that it was a case of foot lameness, though, from the horse's former history, I could not think it a case of ordinary navicular disease. I diagnosed it a case of fracture, without displacement, either of the os corona or the navicular bone, but was more inclined to the former than the latter. This was after a full hour's examination. I failed to find any heat in, or any flinching by manipulation of, any part of the limb; but in walking the

horse was excessively lame, going on the toe, and, indeed, trying, if possible, to keep the foot entirely off the ground.

On December 6th the horse was sent on to Aldershot by rail. He was then walking better, though still very lame. My only treatment for a short time was to apply cold water constantly to the coronet and foot. For two hours daily this was done by a hose, the remainder of the time by a cold swab. On December 14th I applied a strong blister over the coronet, reaching up to the fetlock. This was washed off about the end of December. The horse was then not nearly so lame. I then resumed the cold water treatment, and he got gradually better, and was sent to light duty on February 18th, 1882. He, however, only attended one field-day, and was taken into the Horse Infirmary again on March 8th very lame. Again there was an entire absence of heat or pain on pressure, but the same action, viz., going on the toe. I forgot to remark that he always pointed the toe of the affected leg when standing in the stable, and this symptom continued. I put him under the cold water treatment for a short time, and about the middle of March again applied a strong blister over the coronet up to the fetlock. This was washed off about the end of the month, and was succeeded by the cold water again. Towards the end of April there was no improvement at all, and I applied for permission to destroy the horse. This was carried out on the 27th April, at the recommendation of Mr. Gudgin, I.V.S., Aldershot, and a Board of veterinary surgeons.

On making the *post-mortem* examination, I first thought the bone was only partly fractured or cracked, but on manipulating it, after its being in hot water a short time, I saw the fracture was complete.

I herewith send the fractured bone.

[The bone is fractured completely through, near the middle ridge, and there does not appear to have been any attempt at repair.]

ON THE LITERATURE OF "DISEASES OF THE ELEPHANT."

BY J. H. STEEL, M.R.C.V.S., ARMY VETERINARY DEPARTMENT.

(*Continued from p.* 403, *vol.* xiv.)

With regard to feeding, we are given the following information, which we have arranged in a tabular form :—

FOOD OF ELEPHANT.	*Ratib*, or rice, allowance of 32 lbs. *per diem*, for which may be substituted—1. Wheat-flour, 24 lbs. *per diem* ; 2. Clarified butter (ghee) ½ lb. *per diem*, or coarse sugar, 1 lb. ; 3. Common salt, ½ lb. *per diem*, made up into unleavened cakes (chuppatties) of about 2 lbs. each.
	Spice Balls.—One given per week.
	Water.—Six to eight gallons (Parkes); twice daily, 24 galls. at a time (Gilchrist) ; allow to drink as much water as they will (Forsyth). They will reject muddy, stagnant, or briny water, and "object to that procured in the sandy beds of rivers." An elephant cannot support a deprivation of water much beyond twenty-four hours. (Gilchrist).
Total amount of daily food estimated at 200 lbs.	*Cherraie or Fodder.*—Bamboo will not be accepted for long (Forsyth). Millet stalks (kurbee), dry grass, useful for a short time, but soon green grass required (Forsyth). Sugar-cane, good, in small quantities, and is a great treat (Forsyth). Fresh grass of several different kinds : 1. Kusselah (Gilchrist) ; 2. Kala (Gilchrist) ; 3. Puttairah, guttaoloo (Gilchrist) ; 4. Panee-ka-arecalee (Gilchrist), mixed with a weed liable to purge ; 5. Typha elephantina (Forsyth)—perhaps same as 4, for both found in tanks during the rains. Branches of trees, inner bark of layer, and whole of smaller with the leaves : 1. Raambahd (babool) ka-jahr, least used ; 2. Mandaroo ka-jahr, more used ; 3. Piplee ka-jahr, more used ; 4. Bhur ka-jahr, more used ; 5. Peepul ka-jahr, best. The leaves of the peepul not given during the hot season, as they cause Enteritis and opacity of the cornea. Names given by Gilchrist. "The various kinds of fig-tree, bántján, peepul, and goolar" (Forsyth). When a change is made from wheat to rice, boil part of this for some time, at first ; carefully see that the elephant gets his full allowance, for the mahout reckons on being able to keep his whole family out of the sahib's elephant.

Pringle states that the wild elephant uses his tusks as crowbars for uprooting trees with succulent roots, and upon which he feeds with avidity. The trunk is used as an organ of prehension for liquids as well as solids. The passages through this organ are

something superadded to the ordinary nasal passages, and water can be drawn in probably to as far as the nasal cartilages, and retained for some time. The end of the trunk being passed into the mouth, the water is then expelled into that cavity, and swallowed. This action is accompanied by a peculiar gurgling sound. It was at one time thought that the young elephant sucks with his trunk, but it is now definitely ascertained that this idea is an error based on the fact that, while sucking, the calf caresses the mamma with the trunk, and probably thereby assists in the flow of milk. The nipple is grasped by the side of the mouth, and the dam bends the chest downwards that the little one may reach with ease, or is spared this labour by the care of the attendants in raising a small mound for the calf to rest on (Corse. "Philosophical Transactions," 1799). It is said "that the position of the two breasts in the female enables the young one to suck as it runs along beside the mother, or even under her belly" (Williamson). An elephant in feeding makes use of the tusks, and even the fore limbs occasionally in the emergencies of wild life, but usually he simply requires the trunk as an organ of prehension. With this "lithe proboscis" he is enabled to grasp either great things or small. The former he seizes by twisting the trunk more or less round them, and the skin of the posterior surface of the organ is ordinarily transversely corrugated to make the grip firm. With smaller objects he simply closes the hand-like extremity of the organ, and while seeking a fair trunkful, he will retain small particles in the end of the organ by slight short sniffings. Thus by a judicious exercise of patience the trunk may be able to collect sufficient material to make it worth while for the huge jaws to come into motion, and the immense millstone-like teeth to crush the materials placed between them by the backward flexure of the proboscis. It is no wonder that instinct teaches the animal to keep the trunk out of harm's way with the greatest assiduity. The elephant when attacked by a tiger elevates the trunk to the utmost. In days of old, when horsemen charged elephants, they were instructed to endeavour to injure the trunk; and when an elephant was burnt to death in Dublin the trunk was found "thrust near two feet into a very hard ground." In treatment of wounds of

the trunk the principles of conservative surgery must be attended to, for after an animal has lost a part of this most important organ a large amount of extra care will be required to keep him fit for work.

We need not here enter at length into the moral features of the elephant; its docility and obedience to, and affection for, its keeper are well known.* Instances of remarkable memory and of evident reasoning are given in all books on natural history, and strange as some of them seem, they are not as a rule exaggerated. The immense power of the animal renders it a fortunate thing that the best training can be carried out by the judicious giving of rewards, such as spice-balls and other tit-bits. An elephant enraged is a fearful object; his bellowings are terrific. He charges his enemy with resistless force, seizes him with his trunk, and dashes him against the ground, tramples him under foot, or crushes him beneath the knees, sometimes endeavouring to transfix him with the strong and pointed tusks. When less excited, he has been known to hurl stones and other such missiles at the object of his dislike, and in opposing one another, elephants, watching their opportunity, charge and upset the enemy on his side. They have a curious dislike for small animals, such as dogs, and in an encampment this dislike ought to be respected. It is well known to be dangerous to encounter elephants by night, for they have a most acute power of smell, and hear with facility. They make sounds differing under different circumstances, indicative of rage, apprehension, satisfaction, and other feelings, and the mahouts learn to discriminate between these. The eye, though small, is constantly in movement, and it presents some very remarkable anatomical characters.

There has been a great deal of discussion concerning several points in the physiology of generation of these enormous animals. The main supplies result from the capture of wild ones, and subsequent training. Sometimes pregnant females thus taken calve, and the young ones are trained from birth; but it has been said that the elephant is too proud an animal to

* As instances of extreme docility, many elephants will fasten the picketing chain around their own foot; and the female decoys are said to enter with keen relish into the sport of capturing their fellows, which reminds us strongly of British pressgang-men.

breed in captivity, and thus raise slaves for man, his hereditary foe. This poetic idea, however, is badly based, for elephants can be and have been bred in captivity. With the peculiar position of the external generative opening in the female, it would at first sight seem that the copulatory process would necessitate a special and peculiar posture; but the long clitoris during erection carries the opening backwards, and the position of the male is that of ordinary quadrupeds, while the female goes down on her knees, and rests the forehead on the ground, as is represented on medals and native sculptures. There are several other ideas in reference to this subject, which seem to have resulted from the rarity of elephants breeding in captivity in the present day. The females, under the present system of management, certainly seem to have the sexual instinct moderated in intensity. They are said to carry the young for twenty months and eighteen days. It is interesting to note that the trunk exhibits sexual differences, its extremity being stouter and more square in the male than the female. The young may be fed by means of this important organ (Ouchterlony).

Diagnosis of elephant diseases seems to be in its infancy. Any of the natural functions of the body may be impeded, or the habits of the animal irregular. Thus, there is in Encephalitis a stage of delirium in which the animal endeavours to escape, and may even attack the mahout, and "the trunk decreases in length, becoming sometimes only half its original length." Subsequently paralysis sets in. Apoplexy comes on suddenly; "it does not attack the animal while at active work, and may cause death in an hour after the animal has appeared in perfect health. The animal becomes stupid, and then comatose, and enormous quantities of urine are frequently passed" (Nunn). "It may result from the continued exhibition of stimulating mussalaus, given with the view to support the strength of the animal during arduous labour" (Gilchrist). In inflammation of the lungs the animal is very restless, but does not lie down, opens the mouth very wide frequently, and coughs several times in an hour. Later he endeavours to escape, but is not furiously delirious, says Gilchrist; but he adds, "the disease is obscure." Altogether it is very evident that the symptomatology of this

important animal requires to be worked up with care. There can be no doubt now that the diseases of elephants are as numerous, complex, and amenable to treatment as those of other animals; but until their study is made on a scientific basis, their management must remain empirical, and the man best acquainted with the manners and habits of the animal will have the advantage. The little that has been done in this direction is eclipsed by the large amount of work that remains to be done. The patients are very valuable, and mostly belong to the Government; it therefore is incumbent upon the authorities to do their duty, and make arrangements for the scientific and systematic study of the diseases of the elephant. The infrequency of remains of dead elephants in the native wilds has been commented upon, and therefore it has been urged there should be no necessity for a separate study of elephant pathology. It is probable that internal parasites prove troublesome to the wild elephant, and that insects and other partial ectozoa torment them; nevertheless, the absence of disease in them is attributable to the simplicity of their life-conditions. But we take elephants from their native wilds, and submit them to conditions of domestication without those hereditary adaptations to the domesticated state which we find in most of our other beasts of burden; that the effect of this is not a fearful mortality is due to their large size, which to an extent protects them from cruelty, and from being housed in ill-ventilated stables. It also ensures a reasonable amount of attention being paid to them.

With regard to operative surgery, it is a significant fact that Messrs. Arnold's catalogue of veterinary instruments contains one notice of the elephant, of an enema apparatus which may be obtained at the formidable rate of three guineas per apparatus! We read only of opening abscesses, bleeding and removal of a crustapetrosa tumour. The method of restraint for the latter operation is described by Forsyth: twenty or thirty people sat on the head and body, and so kept the elephant down; he was tied with hobbles, and the mouth kept open by a log with spikes in it, placed like a bit. Ouchterlony says that occasionally in giving draughts it is found necessary to make the animal kneel down, secure him by fastening a chain under the fore-arms and

over the neck, hobbling the fore and hind legs, inserting an iron crowbar between the grinders, and injecting the draught ; which certainly seems a formidable process, and not likely to do a sick animal good ; but *experientia docet!* Generally remedial agents are incorporated with the chupatties, or cakes, with which the animal is fed, and are taken with pleasure by the animal ; the best means of administration of liquid agents seems to be by using the Reed's patent enema apparatus as an artificial trunk. We are told to bleed "on the forehead or behind the ear," which is somewhat indefinite, and to remove one to one-and-a-half gallons at a time. Gilchrist has great faith in the efficacy of this operation, even suggesting it in Zérbád, while Forsyth also recommends depletion by extremely scanty diet and active purgation. The elephant is said to stand operations well, and, like many other of our patients, to exhibit a liking for the surgeon who has afforded him relief. Those who have seen how bravely dogs will stand painful operations and careful manipulation, will not be surprised at this instance of the elephant's sagacity. Both Ouchterlony and Forsyth touch on the question of examination as to soundness. The hints they give are good, and are summarised in our notes as follows: Examine eyes, then trunk for age and general state of health ; ears for scabs and ulcers at their supero-external parts and junction with head, also their free margins and the ear-holes ; the spine for saddle-galls, warts, and so on ; select a flat back, which is generally sound and free from galls, it also carries a howdah better than a highly-arched one. Look for galls on belly, withers, loins and shoulder ; feet for wear and absence of disease, tap all over sole with a hammer; try the paces, and examine as to age and docility, and degree of training. It seems that elephant dealers are not above suspicion, for Forsyth tells us though Bengal landowners sell young useful animals at Sóupúr fair, Mahommedan dealers bring the halt and the blind ; a dangerous man-killer, reduced to temporary harmlessness by a daily pill of opium and hemp ; káudi sores plugged ; sáphán-cracks paid with tow ; sore backs surface-healed ; animals so bedizened with paint, and so fattened with artificial feeding, that it is hard to tell what any one of them would look like if "stripped to the bones ;" space so confined and crowd so great

that you can't get a fair trot. Such are a few traps for the unwary elephant-buyer.

It only remains to summarise our information as to medicinal agents, their actions, uses, and doses, and in doing this our difficulty lies rather in the paucity of material to work with than the reverse. In reading Gilchrist's accounts of mussalaus, recommended by the mahouts, we are reminded of the treatment of the time of Gervaise Markham, as given in his "Way to get Wealth," and of the barber-surgeons of the Middle Ages. The processes of preparation are most elaborate. Thus, ingredients of the most diverse actions, sometimes numbering eighteen to twenty, are taken, prepared, and compounded with the utmost exactness. Sometimes this can be thoroughly done only on a holy day. They are buried near an elephant, and left there for a certain time. The receipts can be ascertained only by the greatest pertinacity. One of the first things we find mentioned is disemboweled frogs, with their legs cut off! We are told that the use of cathartics in the treatment of diseases of elephants is unknown to the natives, and that their medical theory is, "Treatment must be directed either to increase or decrease the body heat." Gilchrist, in 1841, at once introduced free bleeding and the use of cathartics, no matter whether for Zérbád or for Inflammation of the Lungs. He suggests removal of blood to the extent of one to one-and-a-half or two gallons, to be repeated if necessary. His physic dose in Zérbád is, Aloes Barb. ʒiv. to ʒvj., Croton. Sem. ʒij. to ʒiv. With this we are to stop the ratib, and also give three times daily calomel ʒss. to ʒj., and we are told the disease is *very* fatal—a statement which certainly seems likely to be correct as applied to the disease treated on the principles indicated. The natives prefer such agents as sulphuret of arsenic and stramonium. Forsyth gives the following as a convenient cathartic dose: Take, Croton-seeds, one ounce; calomel, one and a-half drachms; aloes, six drachms; rice-flour or goor (crude sugar), 9 s; M. ft. bolus.

The following is given as an ordinary Colic dose (Gilchrist) :— Opium, 1-3 tolahs; assafœtida, 3 tolahs; ginger, 2 tolahs, mixed with jagghery, 9 ʒ. This may be repeated in an hour, if required. In cases of Flatulency, the following is recommended: Ginger,

ʒjv.; assafœtida, ʒj.; sweet flag, ʒij; marjosa bark, ʒviij; antimony sulphuret, ʒij, with jagghery, 9 s.

These formulæ read reasonably enough, but when we come to examine the list of medicines, as given by Gilchrist (with their Hindûstani and Tamul synonyms), we find this otherwise most valuable part of the work has some information which, to those of us accustomed to use medicines at home, seems strange, to say the least of it. Thus sulphur is considered "stimulant" in its action; cloves are "cooling;" black henbane is "cooling and carminative;" stramonium is "stimulant," and coriander seeds "cooling," and so on. What we have written above is not in a spirit of hostile criticism, but rather to indicate the very elementary knowledge possessed by Gilchrist and his informants of the nature and action of medicines on the system of the elephant, and the way in which they may be utilized in the treatment of disease. The ground was practically unbroken then; as far as we can determine from literature, it remains in the same state now, forty years since Gilchrist turned the first sod!

The following imperfect list of agents mentioned by Gilchrist, but not given in our ordinary veterinary pharmacopœias, will prove interesting. It will be observed that almost without exception they are substances which may be obtained in a usable state, and for a small sum in the bazaar:—Dried gooseberries, oleander flowers and bark, cassia, marking nut, small inknut and inknut flowers, sweet flag, cowries, nuts (used in betel), butter milk, orange fruit, grey bondue fruit and seed, jagghery (crude sugar), dammer, bitter cucumber, Indian hemp, Arabian castus, poison nuts, bdellium, carrot root, garlick, liquorice, marjosa bark, chunam, pellitory root, juice of mahaar.

One very interesting and useful feature of native dispensing seems to be the use of ordinary coins as weights. Thus we find the dose very frequently the "weight of one Mysore pice," which certainly is more definite than "pills the size of a pea,"—which latter, by the way, are to be administered hourly. Some medicines are given in the form of electuary.

With regard to agents applied externally:—Blistering ointment is made up of the ordinary Ung. vesic., together with twice its bulk of turpentine; "apply over a couple of square feet." As

wound dressings, we are requested to try the juice of the banyan, or the ripe or yellow branches of the common milk-hedge (?) burnt to ashes, but especially camphorated oil is recommended to keep away the flies.

A special form of bamboo tube is suggested for the purpose of blowing powdered nitrate of silver into the eye. In congestion of the conjunctiva, one prescription from native sources requires a desert-spoonful to be inserted in the eyes morning and evening on alternate days, and goats' or cows' milk in the intervals.

The method of application of fomentation is given with useful minuteness by Gilchrist :—"Cow-dung is mixed with water in This being heated in a large chatty, is applied to the body over as much of the surface as is deemed necessary for the particular malady under treatment. The application is continued uninterruptedly until a coating of it has accumulated, the thickness of which prevents the rapid dissipation of heat. When it is wished to foment the back and sides of an elephant a flannel cloth (phool) ought to be first thrown over the back, and the ends tied together beneath the abdomen. The hot water (without cow-dung) may be applied to the cumblie by means of a brush, as above alluded to. This will soon become saturated with hot water, and the continued application of this will keep up its temperature, which the thickness of the cloth will prevent immediately becoming reduced."

The surgical instrument case, described by Gilchrist, contains, among other things, steel-probes (1 ft. to 1½ ft. long), ordinary human amputating knives, with their handles strengthened by a string binding (for opening abscesses), half a dozen human amputating knives of medium size, but with sharp points for *post-mortem* examinations, and thirty or forty yards of strong bandage cloth. Truly, a Titanic surgical case, proportioned to the size of the patient!

Such is our summary of the information that we, after a somewhat careful search, have been able to gain on the subject of "Diseases of the Elephant."

SUCCESSFUL TREATMENT IN CASES OF ENTERITIS AND PULMONARY HYPERŒMIA.

BY JOHN FERRIS, F.R.C.V.S., 1st CLASS V.S., A.V.D.

Case 15. *H.-2., No.* 63 *R.A., Bay Mare, aged Five.*

July 25th, 1881, 6 p.m.—Admitted after a long march. Enteritis, acute abdominal pains without intermissions. Give Opii Tinct. ʒij, Aquæ oj, *fiat haustus*. Enemata frequently, foment abdomen continually with hot flannels.

6.30 p.m.—Constitutional disturbance increased, pulse 69, respiration 19, mucous membranes highly infected, legs cold. Hand rub, and apply flannel bandages to the legs. Give Opii Pulv. ʒ1js. Hyd. Chlor. 31ft. bolus.

10.30 p.m.—Pulse 63, respiration 19, pain acute, body cold, constantly looking round at her flanks, groaning, and rolling on the floor, bowels not acting. Hot flannels wrung from boiling water to be constantly applied to the abdomen, the body to be warmly clothed. Diagnosis unfavourable.

26th, 9 a.m.—Pain still acute, bowels constipated, and the fæces covered with mucus, the muscular coat is evidently the principal seat of the disease from the constant acute abdominal pain. Give Oil Lins. oj, fiat haustus ; also give Opii Pulv. ʒij, Hyd. Chlo. ʒijs, Mass q.s. ft. bolus.

12 a.m.—The horse has taken a portion of a bran mash, and she is in less pain.

6 p.m.—Frequently rolling on her back, excrement dark in colour, and covered with mucus. Give Oil Lins. oj.

27th, 10 a.m.—There has been numerous evacuations during the night, and the animal is much better, pulse only 51, respiration 14. Discontinue fomentations.

6 p.m.—Steadily improving, all the organs are acting, and it takes food readily.

28th.—Bowels acting, and the fecal matter is much healthier, and free from mucus.

29th.—Progressing favourably.

30th.—Convalescent.

31st.—Discharged cured.

Case 4. *U.*-1., *No.* 31 *R. A., Black Mare, aged Ten.*

June 1st, 1882, 11 a.m.—Hyperœmia pulmonary. Admitted immediately on its return from a boycotting expedition, having been on duty the last twenty-four hours, and travelled a distance of thirty-six miles. Symptoms : head protruding, rigors severe, respiration laborious, pulse about 95 oppressed, and barely perceptible, body, legs, and ears, very cold. Prognosis unfavourable. Remove the animal into a well-ventilated loose box, clothe the body warmly, hand rub, and bandage the legs. Give Ammo. sp. Arom. ʒiv.. Aquæ oijs. ft. haustus.

12 a.m.—Pulse about 100, and very oppressed, respiration carried on with difficulty, rigors still severe. Give Camphor Pulv. ʒjs, dissolved in Æther Sulp., add Mass q.s. ft. bolus. Refuses all food.

1 p.m.—Skin acting, pulse less oppressed, legs still cold, well hand rub them.

2.30 p.m.—Improving, pulse 85, perspiring freely, respiration less difficult, distressing cough lasting abour ten minutes evincing great irritation of the lungs. Give Pot. Nit. ʒij, in water to drink.

5.50 p.m.—Great improvement, eating green grass, pulse about 70, respiration more tranquil.

2nd, 10 a.m.—Pulse and respiration normal, and eats all her food.

5.30 p.m.—Perfectly well, give walking exercise.

5th.—Discharged cured.

Editorial.

VETERINARY INSPECTORS AND INSPECTION.

Just complaint is made by many members of the profession, that veterinary inspectorships under the Contagious Diseases (Animals) Act are only too frequently bestowed by local authorities upon unqualified and, in the majority of these instances, utterly incompetent men. The complaint is perfectly justified and well founded, not only as regards England, but still more so with respect to Ireland. In England local influence, and sometimes economical motives, conspires to induce the authorities who have the power to confer these appointments, to give the

preference to those persons who are not qualified, and who may be very unfit for the post; but in Ireland, if reports are true, such preference appears to be the rule, and the most glaring and discreditable instances of jobbery or stupidity, or both combined, are recorded. Many of the Boards of Poor Law Guardians in Ireland seem to vie with each other in appointing, as inspectors, men least fitted for the duty. In one Irish county, for instance, we are told that eight unions have appointedtwo butchers, one farmer, and five unqualified men, although there are plenty of qualified veterinary surgeons available; and not long ago it was shown in this Journal that a broken-down farmer was elected inspector by one of these boards, merely to keep him out of the workhouse, though an excellent member of the Royal College had offered himself as a candidate.

Not only is this procedure unfair and discouraging to the veterinary profession, but it is also unjust, if not dishonest, to the ratepayers. A trifling economy may perhaps be effected in the matter of salary, but in reality this is nothing in comparison to the heavy loss that must be sustained through the ignorance and inability of such individuals to perform the duties imposed upon them—duties which not unfrequently require all the skill and tact of the most highly-trained veterinarians. Such boards are no friends to the ratepayers, nor yet are they acting in a patriotic manner in making such selections. If they err through ignorance, then the taxpayers should see to it that only intelligent men represent them on such boards; and if the selection of unqualified and incompetent inspectors is made in order to favour a job, or from political or other motives of an unworthy kind, then their retirement from such boards should be rendered compulsory.

Another kind of inspection also requires looking into. We refer to the inspection of dairies. This is in nearly every instance, we believe, committed to medical men, who are, of course, but little fitted for such work. And it would appear from an answer recently given in the House of Commons by the Vice-President of the Privy Council, that the question as to the existence of Tuberculosis among dairy cattle is also likely to be left to the decision of these medical gentlemen. We earnestly hope that the profession will see its way, through the Council of the Royal College of Veterinary Surgeons, to energetically and effectively protest against their effacement in the matter of veterinary inspection. They surely have better claims to be entrusted with the sanitary management and supervision of animals in health and disease than men who have had no special training, or means of acquiring even elementary notions of what is necessary for the fulfilment of such functions. If the members of the profession will not attend to their own interests, they may rest assured they will not be protected or cared for. They need to maintain a watchful eye to detect unfairness, and a resolute will to demand and exact justice. By asking that they may have their legitimate functions allotted to them, they are not only serving themselves, but benefiting the nation and, we may add, humanity.

INOCULATION AS A PREVENTIVE OF PLEURO-PNEUMONIA.

BY R. RUTHERFORD, M.R.C.V.S., EDINBURGH.

(*Continued from p.* 424, *vol.* xiv.)

Having obtained the lymph, the operator next procures fully as many pieces of white Alloa worsted, eight inches long or so, as there are cattle to inoculate. These threads he saturates with the lymph ready for use, the threads in the meantime being the means of retaining the virus until insertion beneath the skin of the animal, after which, from their presence there, they help to localize the inoculative action.

In the actual performance of the operation various methods have been adopted. Most of them, however, are open to grave objections, not only as regards the material employed, but in the spot selected and manner of doing it. I have to condemn as dangerous the practice of making deep and cruel incisions in the head of the tail, and of inserting therein pieces of diseased lung ; as also the modes recommended and carried out lately at the Brown Institution in London by Dr. Burdon Sanderson, viz., by subcutaneous and intravenous injection of the virus. Both are in their nature unreliable, and the latter is, in my opinion, not only a mode fraught with danger to the lives of the animals, but with the great bulk of them and in most hands impracticable. Others, again, in imitation of vaccination, merely scratch or scarify or incise the skin of the tail, and rub in a little virus. This mode is not attended with danger ; but in my experience many of such so-called inoculations fail, from being incomplete and too mild. The mode adopted by myself—and I think my results have proved it a good plan—is the insertion at the tip of the tail of a woollen thread saturated with the virus or lymph in a manner similar to the insertion of a small seton. The advantages claimed are—

1. The minimum of danger, as a result of the inoculative action, spreading from the seat of operation.

2. In the event of the inoculation spreading, it can be arrested by amputation, which cannot be done in any other part of the body.

3. The operation is simple and easily performed.

The instruments required are a pair of strong scissors, a pair of rowelling scissors, and a needle, which latter has to be made specially for the purpose. The one I use is provided with a handle, and is four inches long, three-sixteenths of an inch broad, thin, flexible, slightly curved, and with a lancet-shaped point, furnished with a slit or eye half an inch long and about a quarter of an inch from the point. Across the eye it is slightly broader than at any other part, so as to facilitate its being easily inserted and withdrawn.

To perform the operation quickly, and with as little disturbance and pain as possible, the operator requires assistance—two men and a lad, at least, one of the former to hold the animal by the nose, the other one to directly assist the operator by holding the tail with his left hand, while with his right he steadies the haunch. The lad is required to hold in readiness the saucer or vessel containing the threads, which are now supposed all arranged ready for use, saturated with the virus and doubled into lengths of about four inches.

All being now ready, lay hold of the end of the tail, and clip the hair close off from its under surface from the tip to about four or five inches upwards ; then turning the tail round, so that its under surface is lying upwards and firmly held in the palm of the hand, the first incision is made with the rowelling scissors, about an inch from the tip, then another about two inches or so higher up. The incision should be only through the skin, and there should be little or no bleeding. The needle is then inserted at the lower

incision, and passed quickly upwards and out at the upper incision, care being taken not to go too deep with it. One of the double threads is then inserted into the eye at the point of the needle, and the latter is carefully withdrawn, and in such a way as not to strip the lymph off the thread, which latter, of course, is left in. The operation requires about two minutes time only, and the first step towards inoculation is complete.

In the case of all inoculated cattle, but especially when these are milk cows, the operator must not forget that the well-being of the animal, and consequent success of the operation, irrespective of arresting the disease, is now largely dependent upon the care which he is prepared to bestow on them. He should caution the attendants and milkers to be very careful in their handling of the animals, until out of his hands; they must not be kicked or struck, especially about the rump. Without thinking anything of it, I know people are very apt to do so, if a cow is lying when they think she should be standing, or if troublesome to milk or muck out. Now is the time also to see that the precautions in respect to the comfort of the animal, which I have pointed out as necessary, are in force. The Continental inoculators give a dose of purgative medicine. I have seen no need for it; but I always recommend a little sulphur daily in the food from about the fifth or sixth day. A table-spoonful to each animal daily is enough, continued till the decline of the inoculation.

Favourable and Unfavourable Results.

After the operation the animals are generally a little restless, and to a close observer, some in a few days are evidently out of sorts. They do not, however, go off their food, not in the slightest degree, and in the case of milkers, there is no falling off in the milk given. About the third or fourth day, and from that on to the sixth or seventh day, the tail, at the seat of operation, begins to swell, the hair stumps stand straight out, it is hot, painful on pressure, and of a reddish glazed appearance. There is, however, no discharge from the incision. Following close upon the above, the skin assumes a yellowish tint, and is covered with bran-like scales of desquamating cuticle. About the ninth day, occasionally earlier, but more often later, the animal loses the power of raising the tail, and examination will show that beads of amber-coloured lymph are exuding from the skin around the seat of operation. This lymph is identical in character and properties with that obtained from the lung, good and successful inoculation being obtained from its use. The appearance of this exudate is the most satisfactory evidence we can get that inoculation has taken place, and there can be no doubt that when an animal exhibits it, such a one becomes exempt from "Pleuro." If an animal fails in exhibiting any of the foregoing signs of inoculation, it is generally owing to one of the following causes:—Having had the disease before operation; having it at the time of operation; or from non-susceptibility, instances of which I have frequently come across. Succeeding the appearance of the eruption of lymph, the most favourable course which the inoculation can now take is the occurrence of a mild degree of fever, followed by gradual diminution of the local action, drying of the eruption, and scabbing over of the incision. The animal gradually recovers the use of the tail, and the whole process is practically over in from three to four weeks. A good many cases terminate in this the very mildest way, compatible with protection, especially in the case of bullocks, young stock, and calves.

The majority, however, especially in the case of milk cows, do not end so mildly. In those, following the appearance of the eruption, we get changes of the following description:—The end of the tail swells more, it becomes quite moist from coalescence of the vesicles from which the lymph escapes. There is a tendency for it to become dark hued and low in temperature

towards the tip. Nature terminates such cases when able to do so, in one of two ways, either by the formation of an offensive sloughing sore, which after a time dries up, leaving the tip of the tail crooked and denuded of hair at this part, or death of the tip takes place and a line of demarcation being formed, between the living part above and the dead tip below, the latter is thrown off. My experience, however, is that the great majority of milk cows do not seem to have the power of carrying through this latter process favourably. Left to themselves, the line of demarcation alluded to is never perfectly formed. The death which has taken place at the tip spreads upwards, and although I have seen it finally thrown off at a point higher up, I have in view of the fact, that it may not be thrown off, but may lead to further mischief, made the following my practice :—after the appearance of the eruption I watch each case very closely, and the earlier the eruption appears the closer it must be watched. By experience I know if an inoculation is going to spread, just as one can tell if it is going to decline. The time to watch is about the ninth day, when, if the inoculative action is severe, I at once amputate the tip of the tail an inch or so above the upper incision. The stump should bleed freely, if it does not, then remove a small portion more, or until it does bleed freely. Cauterise the bleeding stump with a red-hot iron, so as to stop the bleeding and form at once a surface impervious to the air. The great majority of cases so treated require nothing more, and in process of time a really very good imitation of a tuft makes its appearance to hide any apparent disfigurement. The shortening of the tail is the only objection I have ever heard to inoculation. The objection is, however, a purely sentimental one ; better, I say, have no tail than no beast.

In some cases we find that the eruption and the swelling extend all the way up the tail. This looks very alarming, but as long as the tail retains its normal temperature throughout the extent of the swollen portion, and a degree of movement, there is nothing to be feared. Keep such cases well protected from cold, and dress the swelling and eruption twice or three times a day with flour—than which I have found nothing better, not only for reducing the intensity of the local inoculative action, but to prevent its spreading and assist in the drying up of the exudate. Such cases are always accompanied by a marked degree of fever, and in the case of cows for a few days they go a little off their food and milk. They generally end by the diminution of the swelling, drying of the exudate, and by the formation of sloughs in one or more places, which after a time heal up, requiring in the meantime no treatment beyond occasional irrigation with carbolised water, or dusting with any drying disinfecting powder to keep down smell. These are the ordinary and favourable terminations of inoculation. The average time required for the completion of the process being, from the day of operation to that of dismissal, as follows :—

Period of	development	9 to 14 days.
„	maturation	4 to 7 days.
„	decline and healing up . .	14 to 21 days.

Calves and young stock have never, in my experience, required any attention after the operation ; they get over it very easily, and very often without the loss of any portion of the tail. Bullocks come next in point of ease with which they pass through it; so that it may be taken that it is milking cows chiefly that require watchfulness and careful treatment from the hands of the operator ; but I would here remark, if I have not already done so, that it is surprising how well they do in most cases from beginning to end of the process. They rarely, as I have said, miss a feed, are rarely affected in their milking, and they always feed and milk even better, after it is all over, than they did before the operation.

The unfavourable conditions, where the operation is in the hands of a careful person, should be very few, and consist in the inoculative action locating itself in some organ or part of the body where its presence and consequences arising therefrom, often proves fatal. They arise chiefly from neglect of some of the necessary precautions I have pointed out, and frequently as a result of injury after the operation. We have sometimes spreading of the inoculative action up the tail, in so rapid a manner, that before the operator can arrest its progress by amputation, the mischief is done and the process has spread from the head of the tail to the parts adjacent. The symptoms of this conditlon are a swollen, cold, deadened, limp condition of more or less of the tail. This is sphacelus, or death of the tail, arising from the intensity of the local action, leading to plugging of the blood-vessels. It may be known by its coldness, loss of sensation, and the bluish black colour of the skin. It may be arrested, and prevented from spreading to the rump, by free amputation and the application of the hot iron to the stump. There must be no false delicacy in such cases, and let there be no mistake about the portion removed—better to remove two or three inches of good, sound tail, than leave the smallest portion whose life has begun to go. I have saved lots of such cases, and have never scrupled about removing the whole tail even, if I thought it necessary to do so. Better no tail (again) than no beast, and its loss does not seem to put them much about.

In others cases a circumscribed swelling occurs in some part of the body, but most usually on the part of the ischium on either side of the head of the tail. These swellings are always the result of a blow received just before or after the operation, and depend upon the localization of the inoculative action in the part. A hard swelling, hot and painful, and frequently productive of lameness, is formed, which, if it is going to run a favourable course, does not spread, but in process of time gradually softens. The mass inside liquefies beneath the skin, which latter finally breaking at a point, the contents gradually escape, and the parts healing up, the animal is left none the worse. During the formation of the abscess some go off their food and milk, others do not.

The really most unfavourable termination to inoculation is where the inoculative action spreads to the muscles of the haunch or back, or to any other part of the body that has been severely bruised or injured in any way; or what is worse, when it spreads from the tail to the anus and vulva, and from those parts inside to the bowel and urino-genital organs. Many cases of the latter get better if the swelling extends no further than the vulva, but if the process does spread and extend inside they end fatally. The symptoms are, more or less, loss of appetite, symptomatic fever, inability to remain for any length of time in a standing posture, swelling of the external parts, discoloration of the skin, difficulty in passing fæces and making water, and straining. Such cases should be destroyed, as they are hopeless, in fact they are the only hopeless ones I have met with. I think they are very apt to happen in the case of animals recently calved, especially if the calving has been difficult—hence my reason for advising the delay of inoculation in the case of newly-calved cows to at least three weeks afterwards, or even longer if the parts be considered weak.

In those cases mentioned, where the inoculation extends to the haunch there is a danger of a fatal termination, from the beast losing the use of the limb, and so getting down; where, however, they retain their ability to move about, rise easily, and take their food, they generally come all right, and are best assisted to this end by being turned into a comfortable loose box. I have not found that any application to the swellings is of any benefit, but, on the contrary, am of opinion that interference with them frequently makes them worse. Such are the unfavourable terminations; formidable as they,

however, appear on paper, it must be borne in mind they are not really so in practice, and that the worst of them, those ending fatally, are of comparatively infrequent occurrence.

Where care is taken in undertaking and carrying out the inoculation, the mortality need not exceed two per cent.; such at any rate is mine, and I see no reason why any one should have a higher rate, providing they go about the work carefully. In my early days my mortality was certainly higher (five per cent.), but I have explained that this arose from the fact that I had everything to learn, and was absolutely ignorant of a great many things, the knowledge and observance of which has since led to better results.

In the foregoing pages I have endeavoured to explain and illustrate the theory and value of inoculation for the prevention of Pleuro-pneumonia, the precautions to be exercised, the mode of performing the operation, with the favourable and unfavourable results. My statistics show the numbers done, the conditions under which they were done, so far as being infected or otherwise is concerned, and the loss attendant thereon; but as the main facts, which really point to the value of the operation, may not be just at once grasped, I will summarize my subject and my experience in the following conclusions :—

1. Inoculation is based upon the theory of Pleuro-pneumonia being an eruptive fever.
2. Inoculation is the application to a healthy animal of the virus of Pleuro-pneumonia.
3. Inoculation does not produce Pleuro-pneumonia.
4. An inoculated animal does not infect another animal.
5. An inoculated animal cannot contract Pleuro-pneumonia.
6. The time occupied by the operation is from four to eight weeks.
7. Inoculation in the case of milk cows does not materially interfere with their milking.
8. Inoculated animals thrive better after the operation, and are stronger and freer from other ailments, than those not inoculated.
9. The loss arising from the operation need not exceed 2 per cent.
10. From the fact that an inoculated animal is exempt from the disease, and that the average time required to develop and mature an inoculation is from fourteen to twenty-one days. That period may be accepted as the time required to arrest an outbreak.

In drawing this paper to a close, I would thank the Highland and Agricultural Society of Scotland for this opportunity they have afforded me of laying my experience, in a plain manner, before the great mass of stock-owners which the Society represents. I would ask them to bear in mind that I have penned only plain practical facts, not theories, and that these facts can be verified by close upon a hundred cattle-owners in the area of my practice alone, who have had abundant reason to be thankful for the good the successful employment of inoculation has conferred upon them. For any crudity the paper may contain I have to offer this apology, it has been put together in the spare minutes only of a busy life, and by one with no pretensions to being a literati. I hope I have shown sufficiently clearly that, in the event of another visitation, the country need no longer depend solely upon the working of the Contagious Diseases (Animals) Act, for that in inoculation for prevention of Pleuro-pneumonia we have a measure which does its work with a minimum of loss and inconvenience to the owner, and with a certainty of so much gain to the public, that it ought to be bracketed in the Act (with the slaughtering of the affected) as compulsory.

PARTURITION IN THE ELEPHANT.

THE very interesting article on the elephant, which appears in our list of contributions from the pen of Mr. J. H. Steel, Army Veterinary Department, and which cannot but prove of immediate value to veterinary surgeons serving in India and Burmah, is to some extent supplemented by a paper on the breeding of elephants in captivity, written by Mr. George Arstingstall, elephant trainer for Barnum, and published in the *American Journal of Comparative Medicine and Surgery*. The breeding of elephants in captivity, writes Mr. Arstingstall, is not very common. Elephants bred in captivity are spoken of by Œlian, even in the days of ancient Rome; but from that day to this it has been a rare occurrence, even in India and Ceylon. In Ava, however, it is quite a common thing, as the elephants are there allowed to live in a semi-wild state. Their mode of copulating is a subject which has excited considerable interest; also the age of maturity or period when they are capable of breeding. It has generally been stated that the elephant is exceedingly modest, even more so than man; this, however, appears to be an erroneous statement. The only clear reason why they are not anxious to perform the act is, that they are kept upon such low diet to keep them under control, that they are, in reality, in a weak and debilitated condition, and their passions not easily aroused. When highly fed, however, they give every evidence of a strong desire to copulate, and when the female is in heat the power of man is utterly unable to restrain them.

The observations of Mr. Corse, who had a large number of elephants under his charge, was that they would copulate, even when at work, in spite of all their drivers could do. The record of his observations seems to be very accurate. First he gives the record of an elephant born October 16th, 1789, which was a male thirty-five inches high. The first year it increased in height eleven inches, measuring forty-six inches in height; the second year it gained only eight inches; the third, six inches; fourth, five inches; fifth, five inches; sixth, three and a-half inches; seventh, two and a-half inches—at that time measuring six feet four inches in total height.

The males grow more rapidly than the females; but in one young female, which became pregnant at the age of sixteen years, in which actual measurements were recorded for five years previous to conception, the animal gained only six inches; but, during the twenty-one months of her first pregnancy, she gained five inches in height. Seven months later she again became pregnant, but during the second pregnancy gained only one-half inch. From this we must infer that the females gain slowly during their early years, but when they become pregnant at an early age increase rapidly in size.

Mr. Corse was inclined to think that the females became pregnant from the fifteenth year on, and that females, under natural circumstances, were fully matured by the nineteenth year. Further than this, he had an opportunity of knowing accurately the days of copulation, and had the pleasure of following the case up to the day of delivery, the history of which is as follows: The bull elephant had connection with the female twice on the 28th and twice on the 29th of June, 1793, the four connections being within sixteen hours. The manner of copulation and the time occupied was the same as is commonly observed in the horse. Three months after connection the breasts began to enlarge, and continued gradually to increase until a few weeks before delivery, when their enlargement was more rapid. On March 16th, 1795, she gave birth to a male, which measured thirty-five and one-half inches in height. This would fix the term of pregnancy at twenty months and eighteen or nineteen days. The infant sucked the milk from the breast with the mouth, often encircling the mammæ with the trunk, apparently to increase the flow.

In the early spring of the following September, 1795, the animal was in heat, and readily took the male. At the end of a few days the female positively refused to take the male, and when he attempted to take liberties he was treated to a kick in the face, and all attempts at copulation were stopped. As he (Mr. Corse) left the station before she gave birth to the second elephant, he could not state positively the duration of the second gestation.

The signs of heat he states to be a slight swelling and congestion of the vulva, which also descends to a slight degree. The measurements of the penis were given at two feet four inches to two feet six inches, and from fourteen to sixteen inches in circumference.

The reason given for their not breeding in captivity is that they are commonly kept on such low diet, to render them docile and under perfect control; but as soon as they are highly fed, it is almost impossible to keep them from copulating and breeding. Another interesting fact in connection with the elephant, is that it is subject to a great variety of diseases. In India it is said that about fifty per cent. die within the first year of their captivity. Again, he states that they often captured the female when carrying their young, and that the young, under such circumstances, are always smaller than those born in captivity, by some four or five inches. This fact, however, is ascribed to the depressing influence which the animals are subjected to gain perfect control over them.

The breeding of elephants in this country (United States), however, is of the most recent date, and only two have come under my personal observation, the first being born at Philadelphia, Penn., on March 10th, 1880, and the second at P. T. Barnum's Bridgeport winter quarters, at 8.10 o'clock p.m., February 2nd, 1882.

Close observations were taken of the act of copulation, during pregnancy, and of the delivery.

The mother of the second is named Queen, and is between twenty-eight and thirty years of age. The period of gestation was not quite as accurately determined as the one above quoted, as the bull was allowed access to her for several weeks; but dating from last-known connection to the day of delivery, makes the period of gestation a few days less than twenty months. Conception may have followed the first act, which would increase the time a little.

For the first few months the animal appeared as usual, but as she advanced towards full term she grew heavy and sluggish, until the last month, when she became decidedly lazy. One of the earliest symptoms noted was the enlargement of the mammæ, which in the elephant resemble the human, both in general outline and position, being in the pectoral region. From the fourth month the mammæ were quite prominent, but developed slowly until the last few weeks, when they rapidly gained in size, until they were about as large as those of an ordinary Durham cow. As near as could be determined, each organ would measure from six to eight inches from base to point of nipple, and at the base about twenty-four inches in circumference. Each nipple was covered until the day of delivery with a scaly coating.

On the morning of February 2nd, 1882, the animal appeared about as usual, but during the forenoon the scaly crusts over the nipples peeled off, and a watery, mucous discharge was noticed coming from the numerous openings in each. Close observation revealed the fact that each nipple, instead of having a single or common opening, had several—the right eleven, and the left thirteen. About two hours before delivery there was a slight watery discharge from the vagina, and it was plain that the lips of the vulva were swollen, the vessels distended with blood, which appeared as so many blue lines. When these symptoms were first noticed, the Queen was separated from the rest of the elephants, placed in a room by herself, and securely

fastened. She kept on eating, and seemed perfectly well until twenty minutes before the baby was born. From that time until birth she appeared a trifle uneasy, but gave no evidence of positive labour pains. The delivery was very sudden, and occurred while she was standing, having previously separated the posterior extremities to a slight degree.

The baby presented head and front feet first, enclosed in its membranes, and appeared to be going up and out of the rectum, which appearance was accounted for by its passage over the pubic arch, and in less than three minutes it had dropped to the ground. The mother instantly straightened up, crossed her posterior extremities, and by rubbing them together soon severed the cord. The little one lay perfectly quiet, and apparently was not breathing ; but the mother, as soon as the cord was broken, turned round, and with one of her anterior feet struck the membranous sac quite forcibly, which instantly broke with a loud report. After rupturing the membranes, she placed her foot on the thorax, and pressed it with the appearance of considerable force, raised it and pressed again, and repeated this operation several times, until the little one began to breathe, and gave positive evidence of life, when she ceased and appeared satisfied. Now, for the first time, she was considerably excited. This stage of excitement lasted for about half an hour. About this time the baby made several attempts to gain his feet, and finally succeeded, but was quite weak on his legs for a number of hours.

The mother gave every evidence of suffering more pain after the delivery, and until the placenta was discharged, than in giving birth to the baby. There was a low beam near by, which she got astride of, and settled down upon quite heavily until the after-birth was discharged, which occurred two hours after the fœtus. This was accompanied by a slight discharge of blood ; the animal stepped back from over the beam, and appeared perfectly relieved.

Five hours after birth the baby walked up to the mother, turned the trunk up over its head, and commenced nursing. Two hours after delivery the baby was weighed, and turned the scale at one hundred and forty-five pounds, and measured thirty inches in height. The little one was of a light mouse-gray colour, and has rapidly grown active and playful.

The milk soon became quite abundant, is nearly the same in colour as that of the cow, but very sweet in taste, closely resembling that of the cocoa-nut milk. The quantity secreted daily is rather more than in the cow, and previous analyses have proven that it is much richer. The quantity of cream, as compared with the best Jersey cow that could be obtained, was found to be one-eighth greater in bulk.

Reference is made to the following works, which may be advantageously added to the bibliography given us by Mr. Steel :—

"Hist. des Elephants," Paris, 1850 ; "Petrus ab Hartenfels, Elephant Topographia Curiosa," 15, 17 ; Browning's "Siam, its Kingdom and People," Vol. I., p. 219 ; "Livingstone's Travels" (*passim*) ; "Philosophical Transactions of the Royal Society," London, 1799 ; "Journal of the Academy of Sciences," Philadelphia, 1880.

INTERNATIONAL VETERINARY CONGRESS.

THE fourth International Veterinary Congress not having been held in 1870, as had been resolved at that which took place at Zurich in 1867, it was decided at the National Veterinary Congress assembled at Brussels last year, that it should be arranged to have the fourth Congress meet in that city in 1883, when the fiftieth anniversary of the foundation of the Belgian Veteri-

nary School, at Cureghem, Brussels, will be celebrated. The veterinary surgeons of all nations are invited to take part in the business of the Congress, and assist in the elucidation of the subjects brought before it. The amount of subscription for these is ten francs only.

A programme will be drawn up shortly of the subjects to be discussed, and reports thereon, for distribution previous to the opening of the Congress. All communications with regard to these should be addressed to Professor Thiernesse, Cureghem (Bruxelles-Midi). Dr. Wehenkel, of the Brussels Veterinary School, is the Secretary.

PRESENTATION TO PROFESSOR SMITH, OF THE ONTARIO VETERINARY COLLEGE.

SOME time ago it was considered that the great services of Professor Smith to the veterinary profession in Canada demanded some acknowledgment. A list having been opened, subscriptions came in freely from many parts of America.

The testimonial—an admirable full length oil painting of the professor, with an address—was presented on March 31st, 1882, in the large museum of the Ontario Veterinary College. The Hon. A. Crooks, Minister of Education, Drs. Barret and Thorburn, and other distinguished citizens of Toronto, as well as a large gathering of graduates and students, were present. The address having been read, Professor Smith briefly and gracefully replied, thanking the donors, and assuring them that his efforts for the advancement of the profession would in no way be relaxed in the future.

The following is the address :—

To Prof. A. Smith, V.S., Edin., Principal Ontario Veterinary College, Toronto.

Dear Sir,—We, the undersigned, graduates of the Ontario Veterinary College, desirous of testifying to our appreciation of your valuable services in the cause of our profession, take the present opportunity of expressing in this public manner a token of our feelings in regard to yourself.

To you and your indomitable perseverance is due the high standing of veterinary science in this province, and but for your efforts we feel convinced that the College of which you are the distinguished Principal, and to which we look with pride as our Alma Mater, would not to-day occupy the position it does, and might not indeed have an existence.

For many years past you have unselfishly devoted your time and talents to the development of our profession, and notwithstanding the many obstacles you have encountered, you have overcome them and made for yourself a name and position which we shall always remember with proud satisfaction.

Some of us have not yet forgotten the state of veterinary science in this province before your time. There was then no system or educational training to fit men for the practice of a profession which, from the very force of natural causes, is one of the most difficult in the healing art. The whole science was in the hands of men who had none of the advantages of thorough instruction, and in too many instances they were wholly ignorant of the rudest elements of veterinary knowledge. This is now changed, and we have ample means of training students, of furnishing them with a practical knowledge of their calling in life, and we can boast of a system of instruction and a dignity of purpose second to none of the other learned professions.

To you, Sir, do we give the well-deserved credit for all this, and we do not flatter you by an idle term when we say that in view of the result and the extent of your labours, you are indeed the Pioneer of veterinary progress in Ontario.

As a public recognition of the valuable services you have rendered, we, therefore, beg that you will accept this Portrait of yourself, accompanied in this by many kind remembrances of your courteous manner and careful instruction as our Principal, as well as with many hopeful wishes for your future happiness as our Friend and Counseller.

Signed on behalf of the Graduates,

Toronto,
March 31st, 1882.

J. H. WILSON.
J. S. CEASER.
J. T. DUNCAN.

C. H. SWEETAPPLE.
E. A. A. GRANGE.
WILLIAM COWAN.
A. A. F. COLEMAN.

ANNUAL DINNER OF THE ARMY VETERINARY DEPARTMENT.

THE Annual Dinner of the Army Veterinary Department was held at the Criterion Restaurant, Piccadilly, on June 9th. There were present Messrs. Collins, Gudgin, Lambert, Tatam, Fleming, Meyrick, Hinge, Walters, Walker, Dwyer, Clayton, Rowe, Boulter, Jones, Matthews, Cox, Burt, Reilly, Rayment, Hagger, Cooper, and Woods.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

REPORT OF PROCEEDINGS AT A SPECIAL MEETING OF COUNCIL, HELD ON THE 20TH JUNE, 1882.

Present:—The President (Mr. George Fleming); Professors Robertson, Simonds, Brown, Pritchard; Messrs. Batt, Blakeway, Cartledge, Cartwright, Cox, Dray, Greaves, Gowing, Harpley, Santy, Simcocks, Simpson Taylor, Whittle, Woods, Wragg.

The SECRETARY read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

Letters were received from General Sir F. Fitzwygram, Professor Walley, Professor Williams, Mr. Broughton, and Mr. Reynolds, expressing their inability to attend the meeting.

Presentations to the Library.

The SECRETARY announced that Mr, Sampson Gamgee, Professor Brown, Dr. G. Evans, and Professor Law had made presentations to the library, and that pamphlets from Monsieurs Chauveau, Cornevin, and Siegen had also been received.

On the motion of Mr. DRAY, seconded by Mr. TAYLOR, a vote of thanks was passed to the donors.

Notices of Motion.

The SECRETARY stated that Mr. Simcocks had given the following notices of motion :—"At the next meeting of the Council of the Royal College of Veterinary Surgeons, to propose 'That bye-law 22 be amended by striking out the words "not less than six," and substituting there for the

words, "all except the Examiners in Botany," so that the first paragraph of said 22nd bye-law shall read as follows, viz., "Of the examiners all, except the Examiners in Botany, shall be members of the College."'" Also, "At the next meeting of the Council to move 'That in view of the fact that non-qualified persons are frequently appointed as Inspectors under the Contagious Diseases (Animals) Act, 1878, even in districts in which the services of qualified veterinarians are obtainable, we cause steps to be taken to represent to the Lord Lieutenant of Ireland and the English Privy Council the unfairness and impropriety of thus excluding members of the veterinary profession from some of the few public appointments which are open to them.'"

The SECRETARY stated that Mr. Casewell had written a letter two or three months ago, stating that he had lost his diploma. He was asked to furnish particulars, which he had done, and which were satisfactory.

The Secretary was instructed to send him the usual certificate.

Letters were received from Messrs. Cartledge, Cox, Broughton, Cartwright, and Wragg, acknowledging the honour of their election as Vice-Presidents.

The SECRETARY stated that he had received several letters enclosing packets of pig powder which had been sent to persons all over the country by a member of the Royal College. The envelope enclosing the letter had on it the crest of the Royal College, and also under it the words, "Royal College Veterinary Surgeons, London," and the Post Office authorities, thinking the letters had been sent from Red Lion Square in London, and failing to find the addresses of those to whom they were sent, had returned them to the premises of the Royal College of Veterinary Surgeons, which caused a great deal of unnecessary trouble. He had written the sender of the letters for an explanation, and informing him that the course he was pursuing was illegal, but he had received no reply, and he wished to know what steps ought to be taken under the circumstances.

Some conversation ensued, in the midst of which

Professor ROBERTSON stated, that it was a very common thing for the Veterinary Surgeons of Great Britain to issue their letters with stamps similar to that on the letter in question.

Professor SIMONDS thought the solicitor of the College ought to be consulted on the subject, and made a motion accordingly.

Mr. TAYLOR thought it ought to be made clear whether any veterinary surgeon had a right to use the arms of the Royal College.

The SECRETARY said he had been often asked if veterinary surgeons could use the arms of the College without paying the tax, and he had replied that, in his opinion, they would have to pay a guinea a year for their use, as well as the College.

The PRESIDENT thought the practice pursued by the gentleman in question was most reprehensible, because he had not only used the arms of the College on the outside of the envelope, but he had placed the address of the Royal College of Veterinary Surgeons under it, so that those who had received the pig powders might have thought they were receiving them from the College.

Mr. BLAKEWAY seconded Professor Simonds' motion to consult the solicitor, which was agreed to.

Mr. CARTLEDGE suggested that as the gentleman in question was a personal friend of his own, and a respectable member of the profession, he would undertake to see him and consult him on the subject before applying to a solicitor.

After some conversation, this course was ultimately agreed to, but in the meantime the Secretary was to consult the College solicitor.

Scotch Examinations.

At the several meetings of the Scottish section of the Court of Examiners, held at Glasgow and Edinburgh on the 10th, 11th, 12th, 13th, and 14th of April, fifty-two candidates passed, and seven were rejected; and for the first examination, fifteen passed, and twenty-seven were rejected.

Professor ROBERTSON said he had had a letter from Professor Walley, asking that the results of the examinations of the Scotch schools should be given separately.

After some conversation as to what had been the usual course that had been pursued,

The PRESIDENT thought it would be as well to write to Dr. Dunsmure, asking him to keep the names of the students from the different schools separate in future.

The Secretary was instructed to write accordingly.

Professor ROBERTSON wished to ask, on the part of the teachers, whether it was understood that they, both in England and in Scotland, had the privilege of attending the Boards of Examiners *ex-officio*, or whether they were there on sufferance. They only wished to know the position in which they stood, because they had no intention of being present on sufferance.

Professor SIMONDS said he had always attended the examinations if he was in London, thinking he had a perfect right to do so; but if it had turned out that he was present only on sufferance—merely because he called in—he would not have liked it.

Professor BROWN said there used to be a notice asking the principals to attend. Since he had not received any such notice, he had not attended; he took it as a hint that he was not wanted.

After some discussion, on the motion of Mr. HARPLEY, it was agreed to defer the consideration of the subject to the next meeting, so that the Secretary and members of Council might have an opportunity of consulting the bye-laws, for the purpose of seeing whether they had any bearing on the matter.

Appointment of Committees.

The following were appointed members :—

Parliamentary Committee.—The President, Professors Brown, Robertson, Pritchard, Simonds, and Mr. Collins, General Sir F. Fitzwygram, Mr. Greaves, and Mr. Harpley.

Museum.—The President, Professors Pritchard and Axe, and Mr. Dray.

Finance.—Professor Simonds, and Messrs. Cartwright, Dray, Greaves, Harpley, Taylor, and Wragg.

House.—Professor Pritchard, Messrs. Batt, Gowing, Greaves, and Harpley.

Registration.—The President, Professors Robertson, Simonds, and Pritchard, and Messrs. Batt, Cartwright, Collins, Dray, Simpson, and Wragg.

Library.—Professors Robertson and Axe, and Messrs. Blakeway and Harpley.

Examination —The President, Professors Simonds and Pritchard, General Sir F. Fitzwygram, Mr. Collins, Mr. Harpley, Mr. Woods, and the Principals of the different schools.

Election of Board of Examiners.

The PRESIDENT called attention to the fact that the five years had expired since the present Board of Examiners had been elected, and it was now for the Council to decide as to whether the election should take place at the present meeting or at the beginning of next year. If the election took place now, it would be inconvenient, because there would be only a short interval

before the July examination was held ; and he thought it would be better if the election took place towards the end of the year.

Professor SIMONDS suggested that the members should be nominated now, and that they commence their duties on the 1st January next.

Professor ROBERTSON said he would propose at the next meeting that the members of Council be prepared to nominate members of the Board of Examiners.

Mr. P. TAYLOR moved that each member of Council, before voting for Examiners, be furnished with a list of the retiring members, stating their duties.

The motion was seconded and carried.

The Secretary's Salary.

Mr. DRAY then made a motion, of which he had given notice at a previous meeting, that the Secretary's salary be increased, and that his salary as Registrar be also increased, so that the proposed increase would raise his salary to £200. This increase he proposed should date from the last annual meeting. Since Mr. Hill had been appointed his duties had been continually increasing, and he (Mr. Dray) considered that the salary paid was not commensurate with the duties performed. As Treasurer he had had opportunities of judging of Mr. Hill's assiduity and energy. He trusted that the proposal he had made would meet with a unanimous vote of approval.

Mr. GOWING seconded the motion.

Mr. TAYLOR called attention to the sending out of voting-papers by the printers, and asked whether the Secretary gave it his personal attention. Considering, also, that as the Council were agitating for the building of a new home for the profession, and looking to the present condition of the funds, he thought they were not in a position to make any immediate advance on the Secretary's salary, and he moved an amendment to that effect.

Mr. GREAVES thought the matter had come before the Council rather unexpectedly, and that the better way would be to discuss it at the next quarterly meeting.

Mr. COX said he was pleased to hear the high eulogium that had been passed on such a worthy officer of the Council. The labourer was worthy of his hire ; and he did not know where the Council could find another such man as Mr. Hill to undertake the duties and perform them so efficiently at so low a salary. He would willingly vote that it should be 200 guineas a year ; but he hoped that before the meeting was over they would be able to tell Mr. Hill that the increase of his salary had been considered in a liberal and proper spirit.

After some observations by other members of the Council, including the PRESIDENT, who bore his testimony to Mr. Hill's excellent qualities as a Secretary, and to his ability and integrity,

Mr. TAYLOR said that after the expression of opinion he had heard, he would willingly withdraw his amendment.

The motion of Mr. Dray was then put and carried unanimously.

The SECRETARY briefly returned thanks for the mark of confidence shown towards him by the liberality of the Council, and explained that the reason why some few members did not get their voting-papers was because they would not trouble to send in their proper addresses. He was continually exhorting members to send notice of any change of address, and was always glad to receive complaints of any kind, because if anything were wrong it could be set right, and would be the means of enabling him to issue a very correct register.

Special Cases.

The case of a member of the Royal College who had been convicted of fraud in one of the Colonies, was again brought up for the consideration of the Council, as to what steps, if any, ought to be taken to strike him off the register. This, with another case of a somewhat similar but more aggravated nature, now pending in one of the Metropolitan police-courts, was referred to a committee, consisting of the President, Professor Pritchard, and Messrs. Dray, Cox, and Batt, who would subsequently report the result of their inquiry to the Council, and then such steps would be taken in the matter as were deemed necessary.

The late Deputation to the Lord President of the Privy Council.

The SECRETARY read the following letters which had been received in reference to the subjects brought forward in the memorial presented to Earl Spencer :—

"Veterinary Department, Privy Council Office,
"44, Parliament Street, Westminster, S.W.
"20*th May*, 1882.

"Sir,—Referring to the deputation which waited on the Lord President on the 26th ultimo, and presented a memorial praying that Her Majesty's Government would grant to the Council of the Royal College of Veterinary Surgeons such assistance as would enable them to secure a proper edifice, I am directed to inform you that His Lordship communicated the memorial in question to the Lords of the Treasury, strongly urging that its prayer might be complied with, and to enclose, for the information of your Council, the reply which the Lord President has received to his application.

"I am, sir,
"Your obedient servant,
"C. W. PEEL.

"The Secretary Royal College Veterinary Surgeons,
"10, Red Lion Square, W.C."

"Treasury Chambers,
"16*th May*, 1882.

"Sir,—I have laid before the Lords Commissioners of Her Majesty's Treasury your letter of the 6th instant (72,397), forwarding a memorial addressed to the Lord President of the Council by the Royal College of Veterinary Surgeons, praying that the Government will be pleased to make a grant to the Council of the College to assist them in obtaining an edifice more suitable to the purposes of the institution than that which they at present occupy. I am to request that you will state to the Lord President that the memorial, etc., has been carefully considered, but my Lords regret that they cannot accede to the application for a grant to the Royal College of Veterinary Surgeons.

"My Lords are deeply conscious of the importance of the study of the diseases of animals as bearing on human diseases, and they are confident the zeal of the veterinary surgeons of the country will not allow this study to languish because it does not receive the doubtful benefit of public assistance.

"The precedents to which attention is called in the memorial belong to a another generation, and, as is confessed, have not recently been followed.

"I have, etc.,
"(Signed) LEONARD COURTNEY.

"The Clerk of the Council,
"Veterinary Department Privy Council Office."

The PRESIDENT said that, notwithstanding these communications, he thought the case was not hopeless. Since the letters had been received, he had been considering what further steps ought to be taken. Mr. Cartwright (member of Council) was particularly intimate with Mr. Cotes, one of the Lords of the Treasury. Mr. Cotes offered at one time to accompany the deputation, and since the refusal of the Government to render any assistance, he (the President) had requested Mr. Cartwright to see Mr. Cotes to ascertain his views on the matter. He (the President) had also taken steps in order that Lord Aberdare might be asked to see Mr. Gladstone specially on the subject. Lord Aberdare was one of the Premier's most hard-working colleagues, and if he could see Mr. Gladstone he would no doubt be able to state the case fairly. He (the President) questioned whether Mr. Gladstone had ever heard anything at all of the memorial. Another way that might be adopted was to get Members of Parliament who had influence with the Treasury, to visit the Lords of the Treasury and explain the case to them, because he thought the letter received had been the work of one of the subordinates. He trusted that the action he had already taken with regard to Lord Aberdare would meet with the approval of the Council, because a few words privately often did more good than any public demonstration.

Mr. CARTWRIGHT detailed the interview he had had with Mr. Cotes on the previous Friday. Mr. Cotes took notes as to what the terms of the memorial were, and said that he (Mr. Cartwright) had better see him again shortly.

The PRESIDENT said he had written to Mr. Cotes before the refusal, but he believed the letter had not been received in time. He was told by Mr. Peel that Lord Spencer had sent in the memorial to the Treasury with a very strong covering letter, and that unless some steps were taken they would get the same answer. He (the President) believed if Earl Spencer had remained in England the result would have been different.

The proceedings then terminated with a cordial vote of thanks to the President.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of this Association was held at the Turk's Head Hotel, Grey Street, Newcastle-upon-Tyne, on 26th May, 1882.

The President, Mr. H. Hunter, occupied the chair.

Present:—Professor Walley, Messrs. J. E. Peele, Durham; W. Awde, Stockton-on-Tees; J. Gofton, North Shields; M. Hedley, Darlington; D. McGregor, Bedlington; A. Chivas, Corbridge; D. Dudgeon and G. M. Mitchell, Sunderland; W. J. Mulvey, Bishop Auckland; W. W. Smart and W. S. Pringle, Gateshead: C. Hunting, South Hetton; W. Hunter, A. Hunter, J. H. Wilson, C. Stephenson, —. Wright, and the Secretary, Newcastle-upon-Tyne.

Apologies for non-attendance were received from Messrs. H. E. Wilkinson, W. T. Briggs, G. R. Dudgeon, C. Sheatley, H. Peele, T. Foreman, and T. Greaves.

The minutes of the previous meeting having been taken as read, the Secretary nominated Mr. Elliott, of Stockton-on-Tees, as a member of this Association.

The President, Mr. H. HUNTER, Newcastle-on-Tyne, then delivered his inaugural address, as follows:

Gentlemen,—In taking the chair as your President, my first duty is to thank you for the honour you have conferred upon me, and I can assure you that I shall endeavour, to the best of my ability, to fulfil the duties of the office and advance the interests of our Association and the profession gene-

rally, knowing that I may rely on your assistance and support. I do not intend troubling you with any lengthened remarks, as the chief topics of professional interest have been almost exhaustively treated during the last few months, and as my old friend and fellow-student, Professor Walley, has kindly consented to read a paper, which I am sure will very profitably occupy our time. I cannot, however, allow this opportunity to pass without thanking him personally, and on behalf of our Association, for the very excellent papers he has brought before us, no doubt at very great inconvenience to himself.

The past year will be ever memorable in the annals of our profession as the one in which the Veterinary Surgeons Act was passed, by which the title of veterinary surgeon is protected, thus remedying a defect in our Charter of Incorporation. It is true that many of us may not feel any immediate benefit, yet there can be no doubt that it will ultimately be of the greatest possible service, and will tend very greatly to raise the status of our profession. Our best thanks are due to the Council of the Royal College of Veterinary Surgeons, and more especially to our President, G. Fleming, Esq., for his untiring efforts by which the passing of the Act was secured. Our veterinary medical associations, both by petitions and personal influence, rendered great service, and materially assisted in passing the Act, our own Association being ably represented by our late President, Mr. Mulvey.

The holding of a National Veterinary Congress is an event the importance of which cannot be overrated, and the promoters are to be congratulated on its great success, large numbers of the profession not only from the United Kingdom but also from the colonies attending, and many subjects of great importance to the profession and also to the public being discussed, thus bringing our claims as a scientific body prominently forward. I sincerely trust the Congress will become a regular institution, and will be held at such regular periods as may be thought desirable.

The subject of veterinary education has of late engrossed a great deal of attention, and no subject could be more profitably discussed. The matriculation examination has been made uniform. This certainly is a step in the right direction, and although the compulsory standard is not high, yet the minimum amount of education required may well answer our present requirements.

We are all pretty well agreed as to the value of practical knowledge and manipulative skill, but great diversity of opinion prevails as to the best means of obtaining them. Some assert that practical knowledge can only be ensured by compulsory pupilage ; others say that this may be a great injustice, and that sufficient knowledge can be obtained at the teaching schools and be sufficiently tested by the practical examination. This I think impossible, for however able and painstaking the teachers may be, they cannot have the opportunity of imparting to each individual student the amount of practical knowledge and manipulative skill which they should have before obtaining their diploma ; and you may depend that however scientific they may be—and no one can value scientific education more than I do—it will fail to be appreciated if not associated with practical knowledge to enable them with confidence and skill to perform the every-day duties of their profession. In the same way I think it is equally impossible for the examiners to sufficiently test the practical acquirements of the students. I am thus driven to the conclusion that the student must be required to obtain this knowledge by pupilage. My own idea is that a youth, say of sixteen or seventeen years of age, on leaving school should go direct to one of the colleges, and after passing the examinations in botany, chemistry, and materia medica, should see not less than two years' practice, if where a shoeing forge is attached so much the better, as he will have greater opportunities of becoming conversant with the principles of shoeing and the diseases of the foot and their treatment,

which form such an important part of the practice in all large towns. After this let him return to college and devote his whole attention to his other studies, and I think any one with average ability and application will become a creditable member of the profession.

The period for which the examiners are appointed expires this year, and it will devolve on the Council of the Royal College of Veterinary Surgeons to appoint a new board; and the time, I think, has arrived when veterinary surgeons may with advantage fulfil the duties of the office, except, perhaps, as regards chemistry and botany. The greatest care should be exercised in their appointment, and none but men of the highest professional standing and literary attainments, thoroughly well versed in their profession, should be appointed—men who will well test the knowledge of the student, and at the same time inspire him with confidence and respect. They should also make themselves conversant with the teaching of the various schools, so that due allowance may be made for some diversity of opinion.

A very influential deputation, organised by our President, has recently waited upon Earl Spencer, K.G., to urge our claims on the Government for aid in obtaining a suitable building, and undoubtedly a very strong case was made out, and it is to be hoped that it may soon bear fruit, and that at last we may be enabled to have a home worthy of the profession.

In concluding these few disjointed remarks, I thank you for the patience with which you have listened to me, and hope this year may be a prosperous one for our Association, that our meetings may be pleasant, and tend to our mutual profit and advantage. (Loud applause.)

Professor WALLEY then read a very interesting paper on "Specificity in Disease," as follows :—

Mr. President and Gentlemen,—The subject I am about to descant upon for a short time—one suggested by my old friend, Mr. H. Hunter—is one of absorbing interest to all, one covering a vast area, one not easily or always understood, and that has been the cause through the whole history of medicine of many discussions. So extensive is it, that in the time at yours and my disposal I can only hope to touch as it were, its fringe; but I trust I may be able to raise a desire in your minds to pursue it further, and that from its discussion something profitable to each of us may ensue.

With the word *specific* as applied to disease there is usually associated in our minds something which is peculiar, either in its origin or character, to a particular affection; certainly, in most cases, something which is occult but none the less special to the malady, and I suppose this *something* at the present day will, in the great majority of instances, be further associated with those ubiquitous creatures—if I may so style them—*germs*; whether this be so or not we usually apply the term specific to some affection in which, by the introduction of one of its fluid or solid products into the organism of a healthy animal, we can induce similar phenomena to those by which it has itself been characterised. Fashion prevails equally in medicine as in less important matters with which the thoughts of men are occupied, and at this moment the fashion is to attribute all diseases to the influence of some specific organism, micrococcus, bacteria, bacillus, or ferment—words, I may remark, of terrible import to the student of medicine, as they mean, before they are even fairly understood, many a weary hour's work, many a sleepless night; and, after all the toil and labour bestowed on them they oft-times take to themselves wings and fly away, or are scattered by the ever-variable winds of pathological teaching. The scientific nine-pins, planted firmly in a framework of microscopic research of one *savant*, are presently knocked over by the merciless bowls of another. One, eminent in research, discerns a specific organism in the products of a particular disease, and draws a wonderful and startling picture of its characters and attributes; another, equally eminent,

presently comes along and (to the intense disgust and chagrin of his antagonist) blurs and blots the attractive sketch by proving that it was only produced by some mal-manipulation of the details of the experiments employed, or that it is at the best some microscopic delusion which the other did not possess sufficient acumen to distinguish.

Again, in dealing with germs themselves, one attributes the results they are said to produce to a material reproduction; another says that they are only carriers of morbific matter; a third, that they are the manufacturers of a principle—chemical or otherwise—which has the power of inducing similar changes in other bodies as those by which it was itself originated.

Amid this conflict of opinions, amid this chaos of ideas, is it any wonder that you and I sometimes stand aghast and ask ourselves, "Where is the truth?" Who are we to believe, or what will be the end of it all? But it is remarkable that while we of an older generation are thus pulled up to a dead stand, the neophyte plunges into the subject as if it were all plain sailing, deals with micrococci as if they were men's heads, the lineaments of whose features were plainly revealed to all observers, and looks contemptuously upon all those who from long habit have come to believe in nothing as being true until its truth is palpably proved. And are we not warranted in nursing this scepticism? When one man discloses he has discovered a special organism in Anthrax, and another shows that a similar organism—one absolutely indistinguishable from it by any physical feature—is to be found in a harmless infusion of hay; and another that the said similar organism can be so cultivated as to become endowed with morbid powers equally as active as those possessed by its fellow; or, again, when a normal secretion —the saliva—is found, with but comparatively slight modifications, to assume qualities of a highly-destructive character, I say, is it to be visited upon us as a defect in mental power that under such circumstances we hesitate to accept as facts mere theories and hypotheses?

Do not for a moment suppose that by these remarks I wish to disparage the great strides that have been made in pathology. I seek not to do so; no person will rejoice more than myself if the causation of specific diseases can be reduced to a tangible and material entity, but I am afraid there is much work to be done ere this can be accomplished, and I, for one, shall accept with some qualification much that may from time to time be put forward until it is raised out of the realm of speculation.

Long has the war between pre-existing life and autogenesis been waged; it is not, I fancy, yet finished, or at least it will again and again crop up in some shape or other. The questions may yet be asked, Is it not possible for that which under ordinary and natural circumstances is harmless or inert to acquire specific characters under extraordinary and abnormal conditions? And though a living unit may not actually spring out of dead matter, may not pre-existing units possessed of definite qualities become so altered in their nature as, in their results at least, to present a striking contrast to their progenitors? Is it necessary that all disease-producing elements must be of a germ nature? May not the bioplasm of the cell elements of the body undergo such modifications by the influence of special agencies as to endow it with new and destructive qualities, and to enable these qualities to be propagated to other living matter of a similar character with which it may come in contact? Or, granted that organisms are the active agents in the production of a disease, is it not possible that under peculiar favourable circumstances those which are ever within, around, and about us may contract specific properties or attributes they do not normally possess? A tissue or a body dies, its vitality is arrested, germ life—bacteria—asserts its dominion over it; and from the degraded débris of the products of disintegration the germs become endowed with terribly destructive qualities. Organisms, I

think, it is now generally admitted, are pretty well harmless, providing the one important factor, a suitable soil, is not forthcoming : just as the seed will not grow if the soil in which it is sown possesses not the necessary nutritive elements, or as the body cannot live if the food presented to it is deficient in the requisite constituents for its growth and nourishment, so will organisms be rendered inert or perish if the ground in which they are sown is not prepared for them.

Two remarkable statements, founded on experimental inquiry, have recently been made in reference to the influence of organisms on the activity of infective matter. The first appeared in the *Practitioner* for August last year, and is made by Deutschmann, to the effect that by inoculation of the iris with the clear supernatant fluid of human tubercular pus no effects followed, but if the solid parts, micrococci, etc., were used, tubercle resulted. In the reinoculations, however, with the products of this artificially produced tubercle no results were obtained until caseation was accomplished, even though micrococci were present.

The second statement occurs in the *Lancet* for 18th February last, and is to the effect that Rosenberger had found that even after the exposure of septic blood and serum to a high degree of heat for a long time (and subsequently filtering and evaporating it) it still possessed infective properties, though in a less degree ; but after reinoculation the products more than regained the virulence of the original matter, and were charged with bacteria. To prove that the fluid was sterilized so far as organisms were concerned, Rosenberger in each experiment inoculated with it some extract of meat, which remained for weeks perfectly clear and free from organisms. From the results of these experiments the conclusion is drawn that bacteria are secondary, but perhaps necessary, elements in the morbid process, and that their development is associated with a chemical, or at least an unorganised, poison. Rosenberger, however, believes that the bacteria alone are the means of multiplying the poison in the animal body. He also believes that the development of the specific bacteria in the body after the injection of the sterilised virus is explicable on the assumption that they arise from non-specific virus already in the system.

The editor of the *Lancet* draws attention to the remarkable support given to these theories of Rosenberger by the results of Buchner's experiments with hay bacilli, and by the statement of Rossbach "that in a chemical ferment of a vegetable origin, and free from organisms being introduced into the blood, the bacteria increase with such marvellous rapidity that the condition of that fluid is comparable to that which results from a true infection."

In reference to the origin of specific diseases, I may call your attention to at least one form of disease of this character, which is most certainly originated in numerous instances independently of pre-existing infection. I allude to specific Urethritis in the bull and Vaginitis in the cow. There is a disease the purulent products of which are as certainly and as highly virulent in their properties as any with which we are acquainted, and yet all who have seen much practice amongst cattle well know that it frequently originates in home-bred stocks where contamination is out of the question. I have also seen Variola Canina originate in nursing bitches without the possibility of their having been exposed to the contagium.

In days gone by it was the fashion to look upon tubercle as a degenerated aplastic exudate or as a miserable abortion. Now a mighty leap has been taken, and Toussaint, in the first place, has disclosed that it is due, not to a degraded product, not to a despised unit, but to the ubiquitous micrococcus ; and in the second place, Koch has recently succeeded in identifying and cultivating the actual causal organism of tubercle (or what

he believed to be such), and his experiments, which also show that this organism is somewhat similar to that found in Leprosy, have been since repeated by Baumgarten; one of the most important results in my estimation of these experiments is, that they have indubitably proved the identity of bovine with human Tuberculosis. Whether other pathologists will, in the course of extended investigations which are sure to follow those of Koch and Baumgarten, show that the organisms described do not possess the significance attributed to them by their discoverers remains to be seen.

In any case it may be looked upon as pretty well proved that tubercle is not the chance product it was once thought to be, but is as truly specific in its nature as is Syphilis or Small-pox. From a comparatively superficial study of its general characters I was led to (in the year 1872 *) make this declaration, and more recently (in 1879 †) insisted more strongly upon the correctness of this view. Since the publication of the work last alluded to, natural clinical facts have been rapidly accumulating, and experimentation has still further aided, which bear out the views I have long held as to the nature of this dire malady; practitioners have recorded many cases of transmission of the disease both congenitally and heriditarily, and I exhibit a section of the tongue of a yearling stot recently sent to me by Mr. Masson, of Kintore, which presents all the characteristics of miliary Tuberculosis and of the concurrent inflammatory changes which accompany the morbid process. The history of the case was that of a specific glossitis simply, but on my desiring Mr. Masson to institute inquiries as to the condition of the dam and sire, he elicited from the owner in answer to a query as to whether the former had ever been observed to show any symptoms indicative of tongue disease, the following quaint and suggestive remark: "A, hi, twa year sine she wad ha hir sta' haff fu o' slaver."

Another phase, or supposed phase, in the history of Tuberculosis, has recently been described, viz., its occurrence as a specific stomatitis in young calves. While it would be presumptuous on my part to deny the accuracy of the diagnoses made, seeing that I have not yet seen the particular form alluded to (I have written to several gentlemen for specimens, but the answer has always been, "Can't send them, the cases get well"), I must, with all due deference to writers on this subject, the opinions of some of whom I highly esteem, decline to accept the statement that the disease is of a tuberculous character. Many years ago Professor Simonds described in his lectures a form of stomatitis which he designated "Malignant Aphtha;" this I have seen in calves, but in all my experience—and it has not been a small one, both amongst healthy and tuberculous breeding cattle—I have seen no mouth affection that presented any characters which I could say identified it with tubercle, and most certainly the statement—frequently reiterated—that the affection is a curable one does not agree with what we know of the incurable nature of tuberculous lesions; moreover, if it is tubercle, are those gentlemen who assert that they often cure the affection acting wisely in so doing? Granted that in tubercle external lesions are healed, is the system restored to a condition of health, or does it not rather still remain tuberculous? I cannot reconcile the statements that have been made on the subject, and most certainly if I were asked to treat such a case—believing it to be tuberculous—I should decline to do so. I am inclined to look upon the disease as diphtheritic rather than tuberculous in its nature.

The importance of the subject of Tuberculosis in reference to veterinary medical sanitary science is being acknowledged more and more every day; veterinary surgeons have for years urged that some legislative steps should

* "Essay on Tuberculosis," *Veterinarian*, Sept., 1872.

† "Four Bovine Scourges," art. "Tuberculosis."

be taken to prevent the indiscriminate use of the flesh and the internal organs of tuberculous cattle, but in vain ; most of our attempts in this direction have been ignored or quietly shelved, but similar efforts on the part of medical practitioners have received a very different recognition.

I could not have used more forcible or condemnatory language as to the use of tuberculous flesh for human food than that which I employed (p. 168) in my work on "The Four Bovine Scourges," but I am not aware that it alarmed or interested any of our medical *confreres ;* and even the editor of one of the leading medical journals was not courteous enough to acknowledge a copy of the work when sent to him. A recent investigator (Dr. Creighton) into the probable co-relation of animal and human Tuberculosis has been more just to our profession. When medical sanitarians join us, and add their voice to ours, something may be done to check the evils which undoubtedly arise from the daily consumption of the milk from tuberculous cows and of the flesh of tuberculous cattle.

If, as in most other diseases, suppression of milk took place in Tuberculosis, the matter of consuming this secretion would not wear so grave an aspect ; but we know that a cow even in the last stages of the affection may give a tolerably large supply of milk. A striking example of this terrible source of evil came under my notice only three weeks ago.

During the course of my periodical inspection of the Edinburgh byres, I observed in one of them a shorthorn cow showing unmistakable symptoms of advanced Pulmonary Tuberculosis, with extensive Tubercular Mammitis. I asked incidentally if the cow gave any milk, and was told she gave three quarts at each meal, and in trying the udder found it was then tolerably full. A few days after I again visited this cow, and found her almost *in extremis* from Dyspnœa, induced by concurrent Emphysema Pulmonum; still giving, however, a large quantity of milk.

The owner, acting on my advice, had her slaughtered, and the autopsy revealed almost universal tubercular invasion of both lungs and the left half of the udder.

Bouley has recently shown that the disease can be transmitted by inoculation with the juice of muscle. At one time I should certainly have hesitated to admit that flesh could be at all innocuous unless there was extensive Lymphatic Tuberculosis, as we do not see tuberculous lesions in muscles generally ; but Bouley's experiments have imparted a graver aspect to the question. It is not a pleasant thing for a man to sit down to a breakfast of *devilled* kidney, and find on cutting off an appetising morsel a mass of caseating matter in its centre. Yet it is not an uncommon experience, and I hold that it is in the use of food of such glandular organs as the kidneys and liver that more danger lies than in the use even of flesh. Certainly thorough cooking may destroy the deleterious properties of the tuberculous material, but can this always be ensured ?

The danger arising from the ingestion of milk from tuberculous animals has been often alluded to, yet no legislative measures are taken to provide against such danger. As inspectors we have a certain power in our hands by which we can protect the public, viz., by taking advantage of the clause of the Dairies Act which deals with milk from diseased animals ; but even here great circumspection is required, and unless periodical visitations are made to byres—as is the case with those under my own charge in Edinburgh—by competent inspectors, the probable existence of Tuberculosis and consequent contamination of the milk supply cannot be brought to light ; and you, gentlemen, know as well as I do the great difficulty sometimes experienced in correctly diagnosing tubercular disease. I repeat the statement made more than once, that the Legislature should empower local authorities to slaughter all animals reasonably suspected of being the subject

of Tuberculosis (especially when the mammary gland is affected), and to give compensation when the autopsy does not support the diagnosis. Moreover, the Legislature should include the disease amongst the contagious maladies, and insist upon regular and competent inspection of dairies and farms. Until this is done I see no prospect of the evil abating.

I have now, Mr. President and gentlemen, to draw your attention to another disease of a specific character, which of late years has increased in a marvellous manner. Some seventeen years ago I became acquainted, while resident near Liverpool, with a disease in poultry which, from it peculiarities, I looked upon as of a diphtheritic character, and subsequently, in my lectures, I designated it *diphtheritic aphtha.* A few years after this first acquaintance I met with the disease in Edinburgh amongst pigeons as well as poultry, and attributed its prevalence to bad hygienic conditions to in-and-in and to too fine breeding, especially as I found it most frequently amongst well-bred birds and in particular families. Up to within a few years ago I had only met with the disease as it presents itself around the external outlets of the different organs about the head, viz., the pharynx, larynx, fauces posterior nares, nostrils, buccal cavity, and occasionally about the conjunctivæ and the external auditory meatus ; but of late years I have become intimately acquainted with it as affecting the internal organs and even the connective tissue of the breast, of the abdomen, the mesentery, and the muscles, and in some instances the connective tissue of the foot and of the wattles in the cock ; and it is a curious fact that I have only seen its localisation in the latter situations in male birds of the Brahma Pootra breed.

This disease is, as you are probably aware, now known as " Gregarinosis," or " Psorospermiosis," owing to the fact that psorospermic organisms are found in connection with the local lesions it induces. By many investigators it is regarded as Tuberculosis, and while in some of its aspects it presents a striking resemblance to that disease, in others it partakes of totally different characters. I have never yet seen in Tuberculosis a product bearing any resemblance to the remarkable bodies found in the connective tissue of the muscles in this disease, neither have I seen any lesions in the wattles or feet in Tuberculosis. Moreover, in this affection we frequently find the lungs entirely replaced by a solid fibrinous exudate of a yellow colour, forming a cast of these organs around and between the divisions of the bronchii and in the intestines ; and even in the abdominal cavity we find similar exudates intermixed with layers or masses of blood coagulum in various conditions of change, sometimes forming a large cyst, the interior of which is filled with a turbid fluid. In the liver, too, the nodules are embedded, as it were, in the tissue ; can be enucleated with the greatest ease, and their structure is stratified.

That the disease is contagious there can, I think, be no reasonable doubt ; at least I have had ample proof of the fact, and, what is more striking, I am acquainted with one case in which a lady purchased a sitting of Brahma Pootra eggs from an infected walk, and the disease made its appearance in the chickens at a very early period of their existence, while other chickens of a different breed showed no symptoms of it, neither had it ever been seen in the poultry yard before. The malady can be readily produced by inoculation, but fortunately, according to Mégnin, the flesh of diseased fowls can be eaten with impunity by human beings ; and Trasbot, of Alfort, has stated that the diphtheritic membranes were placed by a pupil of his—M. Faiès—in his own throat without any evil results.

The exact histological characters of this disease are not yet satisfactorily settled; while some of the continental pathologists look upon it as totally distinct from tubercle, there are others among them who regard it as essentially tuberculous in its nature.

The microscopical characters of specimens prepared and mounted by Mr. A. Grey, jun., at my request, differ very materially from those of tubercle ; and I have much pleasure in submitting for your examination two slides, with specimens illustrative of the histological characters of the two affections.

The dissemination of the nodules internally is certainly similar to that of ordinary tubercle, and, as in that disease, death is largely produced by anæmia (the wattles becoming quite blanched) and exhaustion, the latter being frequently produced by profuse diarrhœa ; but in other respects the two diseases differ widely, though one is undoubtedly quite as specific in its nature as the other. I may, while alluding to gregarinosis, refer to an interesting circumstance to which my attention was incidentally directed a few days ago by Mr. Macfarlane, Lecturer on Botany at the College, viz., that the earth-worm is peculiarly liable to gregarinosis, and the organisms multiply in its interior with marvellous rapidity. It is highly probable that this is one source, at least, of the affection.

There is yet another disease of vast importance to the community, to which I will especially allude in this hurriedly written paper, viz., Black Quarter in calves and lambs.

As it is the fashion now to attribute the origin of every destructive malady to a bacterium, so with this affection, which in its nature is essentially a blood degradation or depravation, and can as readily be produced as it can be checked by purely dietetic and surgical means. I need not detail to you the causes and characters of this well-known septicæmia. You must all be familiar with the fact that it is usually—I may say nearly always—seen when animals are placed on highly nutritious and forcing food, especially if they have been previously subjected to the effects of semi-starvation ; that it always selects those animals which are thriving in the greatest degree as its victims ; that it is seen only in young animals, and locally is marked by stagnation, extravasation, death, and decomposition of the blood.

It has been sought to identify this disease with Anthrax, and I suppose you will all have observed an article in the VETERINARY JOURNAL for last month in which an endeavour is made to show that it occurs in old as well as young animals when brought into infected from healthy districts. Personally, I think there is a wide difference between Black Quarter and Anthrax ; and in nothing is the difference so marked as in the fact that in the former the lesions are more localised, and the flesh of animals that have suffered from it is quite innocuous. More than this, I have never seen it in any but young animals, the oldest (in the practice of Mr. B. Kettle many years ago) being two years of age, although I have seen adult cattle of all breeds and classes brought from districts where the disease was unknown, and mixed with the infected stock ; neither do we see it spread indiscriminately to other animals of a different species. But the most remarkable thing in reference to the disease, assuming (as stated by Toussaint and others) that it is caused by a specific organism, is that it can be so effectually and promptly prevented by a simple surgical operation, *i.e.* by the introduction of a seton into the dewlap. Surely if it were due to a bacterium, such a procedure could scarcely operate so effectually in arresting its spread, or if it did, it could only act by producing such a powerfully alterative effect on the blood, through the nervous system, as to render it incapable of supporting such organisms—an hypothesis scarcely of a reasonable character.

Not only will setoning arrest the spread of the disease when it has once made its appearance, but it will act as a most effectual preventative of it ; and so well known is this fact, that in some districts the practice of setoning young cattle has become universal.

You may ask me how I explain the action of a seton here. I confess it is not easy to offer a rational explanation. If, as I contend it is, the disease is simply one of blood depravation, the operation of setoning can only act in the first place by altering the nutrition of the vital fluid through the nervous system (for you must remember that the preventive action of setoning is sometimes magical in point of time) ; and in the second place, by setting up a drain (the discharge of pus), which tends to restore the equilibrium of the hæmic constituents, or we may accept the only other alternative, and fall back upon the hypothesis, that the nutrition of the blood is so altered by the action of the seton, as to render it incapable of supporting organic germs.

It is not my intention to allude to Anthrax further than to call your attention to a circumstance which recently came under my notice during the course of an investigation into an outbreak of Anthrax amongst a flock of breeding ewes. In this case it was noticed that, with one exception, the animals which succumbed had not lambed ; and on *post-mortem examination* I found that, although the lambs were perfectly developed and well nourished, a dirty sero-sanguineous fluid had been thrown out between the chorion and the uterus ; the cotyledons were disintegrated, and the internal organs of the lambs (especially the more vascular organs) were the seat of marked Anthrax lesions, and there was serous effusion into the serous cavities.

Whatever phase the germ theory may assume, the fact will always remain, that no germ life can thrive where the soil is not suitable to it ; and it must ever be our aim so to change the soil as to render it unsuitable for such a purpose. Whether we attain our object by vaccination, inoculation, setoning, bleeding, the administration of catalytic medicines, by regimen, or any other means, is quite immaterial, this I say must be our aim, and that we have such a power in our hands must be manifest to all who have made veterinary sanitary science an important part of their life's work. I am quite satisfied that even the most virulent of our zymotic diseases can be effectually dealt with by the adoption of strict sanitary and prophylactic measures ; and I confess that I do not understand why in some districts and towns such maladies as Rabies, Glanders, etc., are allowed to run riot amongst the brute creation.

(To be continued.)

SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY meeting of the Association was held in the London Hotel, Edinburgh, May 10th, the President, C. Cunningham, Esq., in the chair. There was a good attendance, the following gentlemen and others being present :—Finlay Dun, Esq., M.R.C.V.S., London ; Captain Hayes ; Professors Walley and Lewis ; Messrs. W. Anderson, jun. ; McQueen, Glasgow ; Hutton, Kelso ; Cameron, Berwick-on-Tweed ; Fingzies, Lochgelly ; Fairbairn, Dunse ; Aitken, jun., Dalkeith ; W. O. Williams ; Alexander Gray, jun. ; E. Rutherford ; Aitken, jun., Edinburgh ; Black, Howgate ; Young, East Calder ; the Secretary, and representatives of the Press.

The minutes of last meeting being read and confirmed, the SECRETARY, in referring again to the proposed testimonial to Mr. Fleming, informed the members that he had received a communication from Mr. Martin, Secretary of the Southern Counties of England Veterinary Medical Association, to the effect that Mr. Fleming had consented to receive a testimonial, providing such did not take a pecuniary form. As the question of supporting

the proposition had not been definitely disposed of at last meeting, it was now open for reconsideration.

Professor WALLEY moved, "That it be intimated to Mr. Martin that the Association cordially approve of the proposal to present Mr. Fleming with a fitting testimonial of the value which the profession at large entertain of his labour in connection with the obtaining of the Veterinary Surgeons' Act, 1881, and that we would be pleased to co-operate with the committee formed."

This was seconded by the SECRETARY, who informed the meeting that he had already been invited and had consented to act on the committee, and that in doing so he would keep the members informed of what they should know.

A letter from the Secretary of the West of Scotland Veterinary Medical Society was read, asking the support of this Society to the following proposal, which had obtained the sanction of the members present at their meeting held in Glasgow, January 25th, 1882 :—"That we memorialize the Council of the Royal College of Veterinary Surgeons to appoint a veterinary surgeon in lieu of a medical man as examiner at the Materia Medica table." It was unanimously agreed, "That we join the West of Scotland Society in so memorializing the Council."

Several members expressed the opinion that this subject was especially one which should be examined on by a veterinary surgeon, and that there was no lack of gentlemen whose attainments well qualified them for the position. If acceded to by the Council, it was thought that the change was one which would commend itself to the profession, and that the examination by a board so constituted would, if anything, be of higher value.

A letter from Mr. Banham, Honorary Secretary to the British National Veterinary Congress, asking the opinion of the Society as to the advisability of the Congress becoming an established institution in the shape of a British National Association, was next submitted to the members for their consideration, as was also a copy of the scheme (subject to alteration in committee) upon which it was proposed to base the purpose of the proposed association.

In laying these before the meeting, the SECRETARY took occasion to say that for some time back he had been revolving a plan in his mind whereby, if carried out, the three Scottish veterinary societies would be more closely drawn together for all purposes. He had taken counsel with Mr. Cunningham, the President, and that gentleman concurring, had placed himself in communication with the President and some of the members of the West of Scotland Society regarding this plan, which was that the members of the three societies meet together once a year—something after this way : ABC being the three societies, B and C would visit A the first year; A and B would visit C the following year; and in the third year C and A would visit B. A favourable opportunity of doing so presents itself in the occurrence of the annual meeting and dinner, which, under this plan, and without interfering with the four quarterly meetings, would be held triennially in rotation, in the place of the meeting of each society. He was glad to say that the West of Scotland Society had entered most heartily into the project ; and although he had not yet the decision of the Scottish Central Society, he was in hopes that the subject, being laid before its members at their next meeting, might receive their support also.

Professor WALLEY did not know if a better proposal had ever been brought before the Society, and highly approving of its object, begged to propose that a small committee be formed to co-operate with the other two societies in completing the arrangement; the same committee to act, if

necessary, with the Secretary in the matter of the proposed British National Veterinary Association.

Professor LEWIS seconded the motion, which was agreed to without dissent. The following, being proposed on the committee, were elected :— The President, C. Cunningham, Esq., Professors Walley and Lewis, and the Secretary, R. Rutherford.

The following gentlemen were elected members of the Association :— Messrs. W. O. Williams, New Veterinary College ; Lindsay, Alloa ; Aitken, Jun., Dalkeith ; Fingzies, Lochgelly ; and Cameron, Berwick-on-Tweed.

The following gentlemen were nominated for membership :—Messrs. Henry Thompson, Aspatria, Cumberland ; Hutton, Kelso; and T. D. Connochie, Jun., Selkirk.

The discussion on Captain Hayes' paper on the feeding of horses, postponed from last meeting, was resumed by Professor WALLEY, who, at considerable length, favourably reviewed the paper. The Professor had, however, reason to condemn the use of Indian corn as a food. His remarks were replied to by Captain HAYES, followed by some from Mr. FINLAY DUN, who spoke rather in favour of the corn, pointing out how in some of the States of the American Union—from a visit to which he had just returned—little else in the shape of grain was used as food. He also took occasion to animadvert on the practice of those people in Ireland who collect young horses for this market, and confine them in darkened stables, blowing them out on soft, boiled starchy food, so as to give them a forward, good-conditioned appearance ; and he was of opinion that such horses were rendered by this treatment peculiarly prone to attacks of Catarrhal Fever, Pneumonia, etc., which very often proved intractable.

Mr. W. M. ANDERSON, Jun., of Glasgow, read a paper on the late Epizootic Fever among horses, describing at length the symptoms of the disease as it had occurred in his practice, and detailing the treatment under the different forms in which it appears. His practice had been most successful, inasmuch as out of about 900 cases he had only had one death.

A very animated discussion followed the reading of Mr. Anderson's paper, which it was agreed upon should be forwarded to the professional journals for publication.

Professor WALLEY subsequently exhibited a tumour, which had grown from the under surface of the parietal bone of a horse, inducing the usual symptoms of pressure upon the brain, and for which the animal was destroyed.

The meeting then terminated with votes of thanks to Captain Hayes, Mr. Anderson, and Professor Walley, for their contributions, and to the Chairman for presiding.

R. RUTHERFORD, M.R.C.V.S., *Hon. Secretary.*

The following is Mr. Anderson's paper :—

Mr. Chairman and Gentlemen,—I feel, in occupying the position of essayist to-day, quite inadequate for the duty I have undertaken. When I accepted your invitation, I did so fully knowing my inability to introduce to you anything of novel importance. Enthusiasm for the progress of this and kindred associations, along with the wish that the different associations could be brought into closer relationship with each other, alone prompted me to undertake a duty which I have a pleasure in fulfilling; but I fear that my utmost endeavours to do it justice will fall far short of what I consider requisite for the furtherance of the cause. I hope, however, gentlemen, that whatever my paper lacks in talent and interest, you will fill up the deficiency by a spirited discussion, exchanging your opinions and experiences freely, because I consider however meagre our observations may be, still it has become necessary in this age of advancement for each of us to subscribe our mite.

The following remarks upon the late epizoötic amongst horses will, I trust, be opportune. Seeing it has been so recently in our midst, the gleanings of our practical observations may assist us in determining its true pathological nature.

Veterinary nomenclature has not yet decided what name is best suited for this disease. Each country has its favourite appellations. On the Continent it is designated "Horse Typhus," "Gastro-enteritis," "Pulmonal Typhus," "Horse Sickness," etc. The Americans call it "American Horse Disease," "Pink Eye," etc. It is known in this country as "Horse Distemper," "Influenza," "Epizoötica," etc. There are so many forms of this disease that it is almost impossible to give it a name which would convey to the mind an idea of its nature: the nearest approach I can make is "Hepatic Influenza-epizoötica." From my experience of the disease, I conclude that the liver is always more or less involved. The malady, according to several writers, appears to have been observed and commented upon by the veterinarians of the 17th century, and since that time it has periodically visited us, each time extending itself far and wide in both hot and cold countries. It is, in my opinion, undoubtedly a specific febrile disease, being infectious and contagious, and capable of arising spontaneously in any country where there has been a continuance of unseasonable weather. (There is no particular season of the year more favourable than another for its development. It appears in spring, summer, autumn, and winter, with equal virulence.) During the recent outbreak which raged in Glasgow and the west of Scotland all last winter I observed that the number of infected animals was in a great measure regulated by the weather. In close, wet weather it spread more rapidly than in cold weather; but on a clear, frosty day (of which days we had very few last winter) there would be no new cases, and even the animals labouring under the disease apparently got a certain amount of relief. The disease presents itself in several forms, which may be classified under four heads, viz., Catarrhal, Œdematous, Rheumatic, and Irregular. In all four forms the primary symptoms are alike, namely, dulness and languidness, then loss of appetite. At this stage we can, as a rule, determine what form the disease will assume. If Catarrhal, the animal has a slight cough, tumefaction of the submaxillary glands, with watery discharge from the nostrils, and the usual febrile symptoms, namely, increased temperature and rapid pulse; the conjunctiva has a yellowish appearance, and all the mucous membranes visible are injected. The pulse is seldom over eighty, more frequently ranging from fifty-five to sixty-five, the temperature varying from 101°—105° Fahr.

I consider the disease takes four days, as a rule, to mature, at which stage the foregoing symptoms are increased. The previously injected mucous membranes become yellow; the animal gets very weak, in fact, staggers greatly; rapid emaciation sets in, still there is no inclination to feed, and it seldom lies. This state of matters generally continues for two or three days before convalesence sets in. The first convalescent symptoms are the eye brightening up and the animal showing an inclination to feed. It is astonishing how soon the patient recovers after convalescence sets in: the symptoms disappear as rapidly as they appeared, and in a few days the animal is apparently in good health. The fatal terminations of this form of the disease are generally due to pleurisy or gangrene of the lungs. When the disease assumes the Œdematous form, after the primary symptoms the eyelids swell, then the legs—more especially the hind ones—tumefy considerably, and the sheath, as a rule, is greatly swollen. There are the usual febrile symptoms, with quick, weak pulse, and urine high-coloured, and often, but scantily, passed.

The mucous membrane is infiltrated with a yellow fluid; there is great

thirst, but no inclination to feed ; rapid emaciation sets in, and in a number of cases diarrhœa is present. This form of the disease also takes about four days to mature. The eyelids are then completely closed, the pulse generally ranging from eighty to one hundred, the temperature from 102 to 105°. As a rule, several days elapse before convalescence sets in, and recovery is much slower than in the preceding form. Should death take place, it is generally through sheer prostration.

In the Rheumatic form, which I must say is the most peculiar, we have loss of appetite and the mucous membrane injected ; there is great lameness in one or more limbs, oftenest in the off fore, without any apparent cause. The animal has an anxious look, as if suffering acute pain. The febrile symptoms are present, accompanied by an intermittent pulse ; the lameness sometimes changes from one limb to the other ; the back is in some cases "roached," and when the animal is moved it generally inclines to one side or the other. There is a difficulty in micturition, and the urine is highly coloured. This form takes about ten days to run its course ; and often the lameness continues for several days after the other symptoms have disappeared.

The fourth form, which I have called "Irregular," includes all the complicated forms of the disease. The usual symptoms of fever and jaundice are present, but in some cases we have diuresis accompanying them, in others partial paralysis, again in others colicky pains, all of which require different treatment, according to their respective symptoms. I cannot say much regarding the *post-mortem* appearances of this disease, as I had only one opportunity of witnessing an examination of a horse which was said to have died from the disease, and from all appearances emaciation was the cause of death. However, the mucous membrane all along the intestinal track was infiltrated with a yellow fluid, and the liver was enlarged. My treatment for this disease of course varied according to the symptoms present ; but in every case in which fever existed the first thing I did was to rub the whole surface of the body with acetic acid and water. If the animal had a fine skin I mixed one part of the acid with two of water, but with draught or coarse-skinned animals I used equal parts. After rubbing the body and legs with this mixture, I ordered the animal to be well wrapped up in several blankets, from the head backwards, and the limbs to be bandaged ; I also put half an ounce of nitrate of potash and fifteen minims of Fleming's tincture of aconite in half a pailful of cold water, and allowed the animal to drink it as he pleased. After the blankets had been on an hour I had them removed, and usually found the animal perspiring profusely. Having had him rubbed dry, and applied soap liniment to his throat and region of the liver, dry blankets and bandages were put on, and he was removed to a comfortable box or stall. The only food I allowed him was a few sliced carrots, mixed with some wet bran, and a handful of oats three or four times a day. In the Catarrhal form I generally applied the liniment to the throat twice a day, and in a few cases had to blister the throat with cantharides. I kept water with aconite and potash constantly before him, allowing him three to five doses in the twenty-four hours. However, after the first administration I limited the dose to two drms. nit. potass., and ten mims. aconite. If the fever continued, without showing signs of abatement, twenty-four hours after my first visit I again applied the acetic acid and water.

When I feared the disease extending to the chest I applied a counter-irritant, and gave sulph. ether two ounces, and camphor two drms., twice daily. In the œdematous form, besides applying the acetic acid and water to the body, and the liniment to the throat and region of the liver, I ordered his legs to be rubbed with mustard and water, the strength being one quarter

pound of mustard to a gallon of water, and then bandaged. I also gave mineral tonics in the form of balls.

In the rheumatic form I gave two drms. salicylic acid twice daily, and applied acetic acid to the affected limb or limbs. In the irregular form my treatment of course varied. When diuresis was present I substituted carbonate of soda for nitrate of potash, and gave plenty of mashed linseed, also occasionally giving two drms. iodide of potassium. When partial paralysis presented itself I gave sulph. quinine and nux vomica. My opinion regarding the treatment of this disease is that good nursing and comfort have more to do with the recovery of the patient than all the medicine we may prescribe. Although the late outbreak has not resulted in many fatal cases, still I am afraid we do not know the worst of it yet, as I have always observed in previous outbreaks serious sequels occurring. Horses which have had the disease in anything like an aggravated form are, in my opinion, ever afterwards prone to liver disease. After the outbreaks which occurred in Glasgow in the years 1866 and 1873, we had a number of severe cases of Colic, not a few of them ending fatally. On making *post-mortem* examinations, I invariably found the liver to be the seat of the ailment, which I attributed to functional changes occasioned by the disease. This disease is seemingly more fatal in some countries than others. In America the mortality is, from all reports, large; and as I observe in the VETERINARY JOURNAL, an account of a disease named "Surra," by Dr. Evans, as prevailing in India, corresponds to the disease which we are now considering, with this exception that it is much more fatal; in fact, few cases, according to Dr. Evans's report, recover.

He attributes the disease to filariæ, but whether Hepatic Influenza-epizootica is due in this country to this cause I have not yet fully determined.

There is little of special importance in this brief account of the disease; but one thing I would draw your attention to, and that is the extraordinary amount of relief afforded to the fevered patient by getting him to perspire freely, and also limiting his diet. The average mortality in this country should not exceed one per cent., providing the animal is put off work immediately after the first symptoms appear. You will observe I have briefly summarized my opinion regarding this disease, without promulgating any theory as to its pathological nature, but have simply laid before you my practical observations, which I trust may assist you in determining the true nature of the disease, which duty devolves upon you.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE seventy-first quarterly meeting of this Association was held at the Medical Institute, Hope Street, on Friday evening, May 12th, 1882, the President (William Leather, Esq.) in the chair. There were present—Messrs. Elam, Reynolds, Donald, Bain, Morris, and Morgan, Liverpool; Greaves, Faulkner, Wolstenholme, P. Taylor, Hopkin, and Locke, Manchester; Edwards and Storrar, Chester; Whittle, Worsley; Woods, Wigan; Wilson, Nantwich; Thelan and Noar (visitors), Manchester; and the Secretary. Letters and telegrams regretting their inability to attend were received from Professor Walley, Messrs. Fleming, Blakeway, Santy, Crawford, Barnes, Schofield, Swithinbank, Welsby, Kenny, W. Lewis, M. J. Roberts, Barron, A. Lawson, and Roughsedge. Representatives of the Royal Society for the Prevention of Cruelty to Animals were present from Liverpool, Manchester, and Cheshire.

The minutes of the previous meeting were read and confirmed.

The SECRETARY read a letter from Mr. Banham, stating, in reply to the question asked as to the action that would be taken by the British National

Veterinary Medical Association in regard to those gentlemen who hold the certificate of the Highland and Agricultural Society of Scotland, that he could not give any answer, but it was a question for the Committee (when formed) to take into consideration.

Mr. GREAVES then proposed the President as a member of the Committee of the British National Veterinary Association ; seconded by Mr. WOODS, and carried.

Mr. WHITTLE proposed Mr. J. K. Pilkington, Woolton, as a member of the Association ; seconded by Mr. ELAM, and carried.

The SECRETARY nominated Mr. Joseph Donald as a member of this Association.

Mr. R. C. EDWARDS then read an interesting communication on "A Peculiar Affection of the Spinal Cord, exhibited in the form of Fits, supposed to be the result of Docking." A lively discussion followed, the majority of the members expressing the opinion that the fits were not due to the docking, but to derangement of the digestive organs.

Mr. GREAVES then read the following essay on "Cruelty to Animals and the Veterinary Surgeon's Duty."

This subject, I have often thought, is one that would form a very useful and interesting topic for the consideration of a veterinary medical association. For half a century I have done whatever I could to suppress cruelty to animals, and give them all the pleasure and comfort compatible with their station.

During my experience the improved feeling of even careless persons towards the lower animals, and the more enlightened sympathy which is felt towards them, are largely due to a better knowledge of their nature, and of the common tie of life which binds us to them. I am quite convinced that the idea of kindness to animals is becoming more generally diffused in society, and hope to see it more universally inculcated in children, especially in Board and other schools. This brings to mind an incident in my life which has ever since been a source of pleasure. The idea seems so beautiful that I must ask you to excuse me if I relate it here. It was as follows :—One day, twenty-five or thirty years ago, as I was visiting the Royal Mews connected with Buckingham Palace, my attention was attracted to several pretty little cats, one in each stall, lying peacefully amongst the straw, one fast asleep upon the back of one of the little ponies. I naturally inquired the reason of it, and was informed that it was the special desire of the Queen that the royal children should have a kitten brought up with the pony belonging to each child. It was carefully inculcated into each child that the kitten and the pony were under his or her (as the case might be) special care and control ; that the children were very often playing with these kittens and feeding them, caressing and feeding the ponies, and that whenever the Court went either to Osborne, Windsor, or Balmoral these kittens and ponies invariably accompanied them. This was ordered by the Queen, with the simple and pure idea of teaching and training their minds in lessons in kindness to animals.

The other day, whilst reading the paper upon this subject which was read and discussed in the late Veterinary Congress, showing the inhuman and diabolical practices in the Continental schools, and the three most excellent papers (one of them by our worthy President, Mr. George Fleming) on the subject in the March number of the *Nineteenth Century*, led me to put down my views and read them here.

Cruelty to animals has been made a penal offence by our legislature. Thomas Barnwell Martin brought in a bill which specified, "That if any person shall cruelly beat and ill-treat, overdrive, abuse, or torture, or cause or procure to be cruelly ill-treated, overdriven, abused, or tortured, any animal, every such offender shall, for every such offence, forfeit and pay a penalty not exceeding five pounds." This act was passed, and is now the law.

I define cruelty to be *the infliction of unnecessary pain*, and that the perpetration of it is an offspring of ignorance; it is uncontrovertible evidence of a debased, brutalized, and perverted mind, which ought to be restrained. No cruel man or woman can be a Christian. This view of the subject is deserving the hearty sympathy of all Christian people. Even our Queen has expressed her most anxious desire that every endeavour should be made to prevent cruelty to animals; our Scriptures also teach us that "the righteous man regardeth the life of his beast, but the tender mercies of the wicked are cruel." There are societies formed for the express purpose of preventing cruelty as far as possible, and to punish where it cannot prevent. Every man possessing feelings of humanity should assist and support them. These societies are countenanced and supported by many most worthy people, who contribute generously to their support; these people are a blessing to the community in which they live, and are worthy recipients of the benefits of that great Being in whose eyes wanton cruelty is most detestable. The various animals around us are given for our use, and we are bound to protect them from needless suffering. From this view my subject appeals to the moral sense and the noble feelings of humanity. I respectfully submit that it is the peculiar province of the veterinary surgeon to assist and protect all domestic animals. It is our daily calling, our special duty, to alleviate their sufferings; it naturally follows that we must sympathize with and love them. From the unlimited opportunities and the experience we have of understanding the nature, constitution, and dispositions of all domestic animals, we must know them better than any other men. As Mr. Stevenson says, "There is no man can do so much towards preventing cruelty to animals as the veterinary surgeon. We are supposed to know the peculiarities of our patients and their feelings, and we ought to go about them gently and carefully, and speaking quietly, treating them kindly, so as to teach a lesson to those who have charge of them." These words are worthy to be written in letters of gold.

I contend that possessing this knowledge, standing on this vantage ground, it is the veterinary surgeon's bounden duty to protect them, alleviate their suffering, and prevent cruelty in any form as far as lies in his power. I say it is not only his province, but it is his duty. All his teaching, all his knowledge, his daily life compel him to sympathize and be anxious to step in and protect them. No grander object can be conceived than humanity pleading the cause of that noble animal the horse: we are justifying the highest purposes of our intelligence.

> "A man of kindness to his beast is kind,
> But brutal actions show a brutal mind.
> Remember He who made thee also made the brute,
> Who gave thee speech and reason formed him mute.
> He can't complain, but God's omniscient eye
> Beholds thy cruelty; He hears his cry.
> He was designed thy servant and thy drudge,
> But know that his Creator is thy Judge."

There is nothing that I am more convinced of than this, that kindness begets kindness. See the evident pleasure that is felt by the horse, the dog, the cat, the ass, when he hears the voice or the footsteps of his master: his heart dances for joy, so to speak. To a man with feelings of humanity this pleasure is mutual. A chord of sympathy exists between them. But this is not all. These animals do their work with a willingness and assiduity which is most gratifying to see. On the other hand, we always see a bad-tempered man make a bad-tempered horse. Continuance of ill-treatment makes him vicious; the animal is in continual fear; an enmity is set up betwixt them; the servant hates his master, does his work with ill-will, and, even with the

assistance of the lash, you fail to get the same amount of work out of him as the other renders freely.

Now there are instances, and I say it is wickedness and criminal in any man possessing this knowledge to countenance or support in any degree, or in any way make excuses or palliate wanton cruelty—I have seen instances where a veterinary surgeon has lent himself to the cause of cruelty, and has exulted in having supported an unfeeling and cruel man. This can hardly fail to affix, however undeservedly, a stigma upon the whole of our profession.

At a meeting the other day in the Mayor's parlour in our Town Hall, our worthy Mayor uttered sentiments on this point that did honour to him as a man and as the first magistrate of this great city.

In the consideration of these cases of cruelty, there are two or three important points which should be carefully borne in mind. I assume that it is admitted on all hands that a good deal of cruelty is perpetrated in our midst, and it is right that some individual, or some body of men, should interest themselves in them, and should step in between the cruel man and his dumb, suffering beast, to relieve him of his suffering or to prevent further suffering. Now the variety of cases of cruelty which can be named are interminable, but I shall only bring before your notice some of the more prominent or frequent sort of cases that are interfered with; and in doing this I am anxious to lead your minds to some useful conclusions, and show in what way an observant veterinary surgeon can be of practical benefit to the poor suffering animal. I will simplify my subject as much as possible, and for that purpose will divide my cruelty cases into three categories :—

1. Cases of lameness.
2. Cases of overloading and overdriving poor, weak, and half-fed horses.
3. Cases of wounds and sores.

First, cruelty as a result of lameness. Now there are many degrees of lameness. The degree of lameness is, in nearly every case, commensurate with the degree of pain, and the degree of pain is exactly the degree of cruelty if compelled to move. On this particular point, it is no uncommon thing to find even veterinary surgeons to differ in opinion as to whether it amounts to cruelty or not. Both parties may be humane and merciful, but they differ as to what is cruelty and what is not. In every such case I should say it must be such a one that a man, uninfluenced and unbiassed by partisan feeling, and possessing the ordinary feelings of humanity, or, in other words, any sensible, fair-thinking, humane man, would not allow to work. If a horse in such a condition is found working, I say society is only performing a sacred duty in interfering to prevent the cruelty and punish the offender. If the cause of lameness is such as can be removed, it is the bounden duty of the veterinary surgeon to see to it. For instance, it may be a badly fitting shoe, too tight upon the heel, or pressing upon the sole. In such a case it can soon be remedied by having the shoe properly fitted. In all cases of Sandcrack, Stringhalt, Navicular Disease, Pumiced Sole, Anchylosis, etc., a line must be drawn where cruelty begins; and I think it is safe to lay it down as a rule that in every case in which the lameness is very slight the pain must be very slight, and, if the horse carries good condition, it is not cruelty for such a horse to do slow, moderate work. It would be better if he could work on soft roads or in fields. But if the lameness is considerable the pain must be considerable. If the horse is perspiring, and his breathing is inordinately accelerated in his work, a certain indication of pain, such a case is cruelty, and ought not to be allowed to work, especially upon paved streets; but in every such case the magistrate leaves the bench, and sees the horse himself, and forms his own opinion. It is often the case that our explanation is looked for, to enable them to fully understand the nature of the case, and give just judgment. In all cases of Bone Spavin—in every

such case the horse suffers pain every time the heel descends to the ground. This puts a strain upon the joint that is attended with pain. It is a very frequent case that a horse with a Bone Spavin will come back to the smithy the day after he is new-shod. The man will say, "My horse is going very badly since he was shod: I fear he is pricked," when it is simply referable to the new shoe having a higher toe on than the old shoe had, and there is consequently a greater degree of leverage to the hock joint. By taking off the shoe, knocking the toe of it lower, and raising the heels, it meets the case, and he will travel again as well as before. Then as regards contracted tendons, I have frequently observed that veterinary surgeons do not pay that attention to these cases that they should. I am now speaking of both veterinary surgeons who have no forge and those who have. I have seen such a horse leave a veterinary surgeon's forge new-shod with the ordinary common shoe, in which the heels of the shoe never came within two inches of the ground. He might just as well have been shod entirely without heels. Such heels in such a case are of neither use nor ornament. If a veterinary surgeon will only think for one moment, he will instantly see that, when the horse is drawing, every time the heels are forced to descend, fibres in the diseased tendon must be stretched, and this tension of contracted fibre is accompanied with considerable pain and suffering. Even when the horse is standing still the same thing is taking place more or less. See how anxious the horse is to find a hole in his stall to get his toe in it. No veterinary surgeon or shoeing-smith is justified in allowing such a horse to leave his forge until he has first had him walked out, and seen whether the heel or calkin of the shoe reaches the ground every time the foot comes to the ground. If it is too long or too short, the shoe should be taken off again and nicely adapted to the requirements of the case. This is what we always do at each of our forges to every horse with contracted tendons. We have numbers of such cases working constantly in the streets of Manchester. The pattens on the shoes are of various lengths (from 1 to 3 or 4 inches high), according as is required in each individual case. The officers of the society see them regularly in their work, they say. I see these horses start their loads on the lame leg: this is ample proof to me that it does not give the horse pain, and consequently is not cruelty. But mark the sequel. Whenever these horses happen to break the patten or heel off their shoe, and they find there is no longer a support under the heel for the contracted tendon, and that the heel must descend and the tendon must be stretched, they will stop at once, and you cannot drive them along, only on three legs. Now I say the veterinary surgeon who neglects to observe this and adopt it is certainly committing a dereliction of his duty not only to the owner of the horse, but also to the poor dumb beast. I have heard it said that this method will favour the progress of contraction; but no greater fallacy can be advanced. You cannot cause contraction if you try ever so much or ever so long.

Occasionally the owner or driver will deny that the horse is lame; they will set the officer at defiance: but in nearly every case when close pressed they will inculpate themselves; they will admit the horse is rather stiff, a little lame, but they did not know he was in pain, or that they were *intentionally* causing cruelty. I have known their ignorance persisted in where the degree of pain was as if a penknife point was stabbed into the joint every time the foot jars upon the stones!

Some people say this is a noble institution often abused by the ignorance or indiscretion of the inspectors; that they are in the habit of stopping a poor man's horse, while at the same time permitting a rich man's horse to continue his work without even a caution. Possibly this may have happened, but in my opinion these inspectors are sometimes very unjustly condemned. Do not be uncharitable towards them: if we occupied their places we could not please

all parties. I maintain the principle that cruelty is cruelty, whether inflicted by the rich or by the poor man. I would always show more leniency to the poor man than to the rich man, because the rich man is better educated, he knows better, and can afford to let his horse rest, and it is our duty to prevent it as far as possible in both stations. I always counsel the inspectors to caution drivers, and if no attention is paid to such counsel, then take them in hand. I do not go as far as to say the society should interfere only in extreme cases. Surely it does not require a high classical, scientific knowledge to decide what is cruelty. Common sense is required, and this is possessed by inspectors as well as veterinary surgeons.

I contend that these societies are not only noble in themselves in preventing cruelty: the very presence of the officers in the streets is a terror to evil-doers, and in this way they are in reality accessories to the veterinary surgeon's number of cases. Many men who would be working a lame horse, or a horse with sores on him, knowing that he would in all probability be stopped, and taken before the magistrate, and be fined, sees it to be his interest to take him to a veterinary surgeon, and get him put right as quickly as possible, so that he can get such horse to work again. Numbers of these cases would be kept working, and never be brought to our surgeries, only for the fear of the societies; therefore I say it is not only our sacred duty, but it is our interest also, to support and assist them. In saying this I do not mean that we must support the officers in every case, whether they are right or wrong. I freely admit that it has occasionally happened an overzealous officer has apprehended cases that he was not justified in doing. In all such cases it is the veterinary surgeon's duty to use his better knowledge respectfully but firmly, in guiding the inspector and assisting the magistrate to arrive at a fair and just conclusion. But do not let us condemn a system simply because of occasional accidents in the system.

Secondly, cases of cruelty from overloading and overdriving poor, weak, half-fed horses are frequent occurrences. When horses are under their work, too small for the duties they are called upon to perform, badly kept, and worked without mercy, probably very old, and when utterly unable to move their heavy loads, then the whip is brought into active service. Such cases I call double cruelty, and some humane man should step in and prevent it. If the horse is very stiff from incurable ailment, far worn, he is in all probability so slow in his work as to be utterly unable to do a day's work, and prevents the man from doing a full day's work or earning a proper day's wages. In such a case it is wisdom to destroy the horse. Such horses are often found in the possession of men in a state of poverty, men who have little or no sense of feeling or kindness to animals, men who think nothing of putting a poor horse to unnecessary pain and suffering. I have often met with these purely selfish and unfeeling men. They seem to think it no wrong to torture a poor dumb, helpless creature, so that they are enabled to earn a precarious living. They have said to me, "The animal is my own, surely I can do what I like with my own." I reply, "No, you cannot, whether it happens to be your wife or your horse." They seem to be actuated with the same sense of right and wrong as Legree had when he said to Uncle Tom, "An't I your master? Didn't I pay down twelve hundred dollars cash for all there is in yer cussed old black shell? An't yer mine now, body and soul?"

Third Class, cases of cruelty arising from wounds and sores. These are cases of frequent occurrence, and surely no man can be found who will for one moment contend that when the saddle or the collar is chafing on a raw sore for hours together, it does not occasion severe pains. These are often the result of bad-fitting collar or saddle, on a carcass of nothing but skin and bone. Now the man who would allow the poor horse to go out working day after day in such a state must be a man devoid of feeling, and

richly deserves punishing. I have met with men who have told me that donkeys have no feeling, and that horses are analogous to them in their nature ; but an observant horseman, who has been long accustomed to horses, can feel, and is as thoroughly convinced as if the horse spoke and told him. Now the horse cannot tell a lie, and I would sooner believe him by the manner he shows his pain, than I would believe many a man on his oath. No one feels this so keenly, for no one perceives it so clearly, as the veterinary surgeon. He is not guided by emotions only, but by his judgment, and to him his suffering or dying patient appeals for aid and protection. We know what pain is ourselves. I remember when a boy being terribly troubled with boils on my thighs and on the calves of my legs. I could scarcely bear a breath of air to touch them, so highly sensitive and painful were they, much less the pressure of a stocking, or even a fine linen rag ; but in the horse it is said, " Oh, it is only a little heat-lump or warble ! it is nothing. Keep working him " ! Again, I have known many instances of blacksmiths coming to work after a long rest, probably having been laid up from a long sickness : the friction of the hammer-shaft will cause the palm of their hand to become so exceedingly sore, the skin becomes worn through and blistered—it is sensitive in the highest degree ; the pain is something terrible, it feels like grasping a piece of red-hot iron every time he lays hold of the hammer ; however hard the man may be, he is obliged to give up for a time—it is impossible for him to continue. But the poor horse, in precisely the same condition, with sore shoulders or sore back, must keep at work, drawing heavy loads, until large patches of dead skin slough away. God forbid that any veterinary surgeon can be found who will stand up and say this is not cruelty ! Do you tell me that the horse has not the same sense of pain that man has? I challenge you to the proof. Only see the fine-bred horse. If you only trail the end of your whip-lash as gently as you possibly can across his back, he feels it and responds to it with a bound. See a fly alight upon his skin : he instantaneously corrugates the skin, and tries to shake it off. Let a horse-fly fasten itself on his skin : see the frantic efforts he makes to dislodge it. These are convincing examples, though many others could be given, that it is a fact that his skin is as sensitive as ours is. It must be so. We know that his organization is as perfect, in every sense, as ours : the physiological and pathological structure of his heart is precisely the same ; the organization of the brain and nervous system is precisely the same—I mean the cerebrum, cerebellum, the medulla oblongata and medulla spinalis, as well as the respiratory or sympathetic nerve, with its action and reflex action ; the skin, too, with its network of nervous filaments and blood-vessels, is precisely the same as the human skin. Let us never forget that they are as fearfully and wonderfully made as man is.

> " The poor beetle that we tread upon,
> In corporal sufferance feels a pang as great
> As when a giant dies."

If the horse has an old-standing wen or blemish under the collar or under the saddle, or indeed anywhere else, if it is found that you can press it and slap it, and the horse does not flinch, it is quite natural to conclude that there is no tenderness, no pain, and consequently no cruelty to work him. When we are following our daily duties and performing all necessary operations, let us always be as careful, expeditious and merciful as possible ; let us see to it and insist upon it with everyone we have to do with ; let us check the infliction of pain on all sides, both in season and out of season ; even in our ordinary treatment of our patient let us observe habits of moderation and mercy ; let us eschew severity in every form. In the discussion in the late

Congress, Mr. Hurrell said, "I remember a mare that was blistered. The man who blistered her went to a chemist, and got him to mix him up a blister. In the course of three days she had inflammation of the kidneys, and she died two days afterwards." Again, Mr. Stevenson said, "I have seen well-bred horses suffer immense pain for days from blistering, when in all probability that blistering was not required. In fact it is quite possible that the blistering did a deal of harm, not only causing direct pain to the animal, but inflammation has set in that took three times as long to put right." Now I can fully endorse this view, and most earnestly condemn severity in the treatment of disease. I would ask every veterinary surgeon who has not already done so, to read Mr. G. Fleming's Prize Essay for 1866, the Proceedings of the National Congress on Cruelty, from page 96 to 111, also the three most excellent essays on vivisection in the *Nineteenth Century*, last March—one is from the pen of Sir W. W. Gull, one from George Fleming, and the other from T. Lauder Brunton—perhaps the best ever written in this or any other country. These essays throughout their entire extent breathe one continuous condemnation of cruelty ; that is, the infliction of unnecessary pain. But genuine scientific investigation is another thing altogether. The welfare of all, from the highest to the lowest, is dependent at some time or another upon the knowledge which it brings. If to-day it inflicts temporary pain, it annihilates its causes and its necessity in the future. Nothing is so cruel as ignorance. There are delicate and sensitive natures whose prejudices in these matters ought to be respected, whose judgment is entirely subordinated to their feelings ; but we are bound to look upon pathological investigations in a broad and generous light. By their use disease and mortality have been vastly diminished, and continued experiments in the same direction will cause further diminution. If mankind benefits, so also animals. The sum of the matter seems to be, that human life and relief of human misery are objects which justify the infliction of pain upon animals, *provided always that the suffering be no more than is necessary for the end in view.*

It is with the greatest possible satisfaction that I find the principals and teachers of each of our veterinary schools repudiate vivisection, as utterly unnecessary in the teaching of veterinary science.

Mr. ELAM said we must all agree that the paper did Mr. Greaves great credit. When he had to deal with an animal very slightly lame, and there was a doubt about it, and it belonged to a very poor man, he thought it more cruel to the man to stop its working than to work the animal at slow work.

Mr. P. TAYLOR thought we ought not to discuss the subject in the presence of the officers of the R.S.P.C.A.

The PRESIDENT and SECRETARY explained the reason why they were present.

Mr. STORRAR said it was highly necessary to form your own opinion when you see the animal. The lameness might be mechanical, from Anchylosis, there being no pain. When called in we should not take the owner's interests into consideration, but confine our opinion as to whether it was an act of cruelty to work it or not. Thought the practice of overloading was much too prevalent, and strong steps should be taken by the R.S.P.C.A. to secure a conviction and decide the point.

Mr. HOPKIN wished to know if the discussion was to be confined to the subject of the paper, or whether it was advisable to consider also the action taken by the officers of societies; upon which Mr. FAULKNER proposed that Mr. Greaves's paper on "Cruelty to Animals and the Veterinary Surgeon's Duty" be discussed in all its bearings, and extend to the duties of the various societies for the prevention of cruelty to animals ; seconded by Mr. HOPKIN, and carried.

The discussion was continued by Messrs. Hopkin, Wolstenholme, Woods, Morris, and Wilson, and was of a controversial character, the main arguments being principally directed against the action taken by the societies' officers, the result being, that Mr. ELAM proposed that Mr. Motum be allowed to bring in a paper on the subject at the next meeting, to be read either by himself or a member ; seconded by Mr. GREAVES, and carried.

A vote of thanks to Messrs. Edwards and Greaves, the President, and the Secretary terminated the meeting. J. W. P. MOORE, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

AT the monthly Council meeting, held on June 7th, the Hon. W. EGERTON (Chairman of the Veterinary Committee) reported that the Committee had amended a circular, inviting veterinary surgeons to act in twelve country districts, and had instructed the secretary to send a letter in accordance with it to the veterinary surgeons nominated. The Committee recommended that a grant of £50 be made to the Brown Institution, to carry out the experiments mentioned in Dr. Burdon Sanderson's letter, as follows :—

"During the year that has elapsed since Dr. Greenfield resigned the superintendentship of the Brown Institution and, in consequence, discontinued the experimental inquiries in which he was engaged for this Society, investigations have been continued at the institution relating to the important subject of Anthrax or Splenic Fever, with special reference to the prevention and mitigation of the disease by the inoculation of 'cultivated virus.'

"It is probably known to the Committee that experiments relating to the same question, and leading to results similar to those communicated several years ago to this Society, first by Mr. Duguid and myself, and subsequently by Dr. Greenfield, have been recently made in France, chiefly by M. Pasteur, and have attracted a great deal of public attention in this country.

"Experiments recently made at the Brown Institution since the appointment of the present superintendent, Dr. Roy, have showed that the conditions which must be fulfilled in order that the brilliant discoveries of M. Pasteur may be of practical value, require much further investigation than they have yet received. The experiments I refer to have been necessarily made on small rodents.

"In order that the results may claim acceptance as definitive, it is necessary that they should be extended to larger animals, particularly ruminants.

"With this view I venture to ask you to be good enough to bring the matter under the consideration of the Committee, with a view to the recommendation to the Council of a grant of money for the purchase of a sufficient number of sheep for the testing, under Dr. Roy's direction, of the protective value of cultivated virus, which has been recently prepared at the Brown Institution, and of the pathological effects which follow its inoculation.

"I would suggest that the grant, if approved of, should be made either to the superintendent of the Brown Institution, Dr. Roy (under whose direction the experiments must be made), or to the Committee of the Brown Institution, as before. In any case, Dr. Roy would undertake to furnish a report for the *Journal* within a short time after the completion of the experiments."

The Committee had received a report from Professor Robertson in regard to the Foot-and-Mouth Disease experiments now being conducted by him, the publication of which is postponed pending further experiments on the same subject.

The report of the Committee was adopted.

Army Veterinary Department.

Gazette, June 9th.

Veterinary Surgeon Walter Henry Kemp to be Veterinary Surgeon, First Class. Dated 9th February, 1882.

Correspondence, etc.

A SUGGESTION.

SIR,—From the reports of the Veterinary Medical Associations which have appeared in your valuable Journal, there appears to be a general wish that some grateful acknowledgment should be manifested towards the worthy and respected President of the Royal College of Veterinary Surgeons, for the great exertions he has made towards the advancement of our noble profession.

It is impossible for me adequately to explain how his unceasing labours *have* been continually employed for the accomplishment of those results which we now acknowledge to be of the greatest advantage to our present and future prospects. There is, however, one point still remaining unfinished upon which our President has already devoted a large portion of his time and anxious thought, and which I know he is still desirous to see completed, viz., the creation of a "local habitation." It was for this purpose that he obtained an interview with Earl Spencer, accompanied by a large deputation, which may be truly said to have represented the principal scientific men of the day. Whatever results may yet follow the representations then made it is premature to discuss. But surely a further move by the profession itself would not now be out of place. It would support the exertions already adopted by the President, render them more likely of success, and form a fitting expression of our esteem and respect.

To carry out this object, I would suggest to the presidents and members of the different Veterinary Medical Associations that they organize various sub-committees, and canvass every veterinary surgeon resident within their respective districts, in order to obtain suitable funds to complete this good work. Surely, if we put our shoulders to the wheel, this desirable result may be accomplished. Then we can commemorate the joyful event by placing a marble bust of Mr. Fleming in the entrance hall of the future college, and thus express our grateful thanks to one whom it has been our privilege to honour and admire.

Yours faithfully,

Aldershot, *June 6th*, 1882.

THOS. WALTON MAYER, F.R.C.V.S.,
Late Professor of Vet. Medicine, Royal Agricultural College, Cirencester.

"CRUELTY TO ANIMALS."

SIR,—Observing in the *Veterinarian* for April, a letter on this all-important subject by Mr. C. Cresswell, M.R.C.V.S., of Nottingham, and feeling, as I do, the great benefit which is to be derived from an open discussion in your valuable journal of a topic of such vital interest to us as veterinary surgeons, I feel it incumbent upon me to make a few remarks, as I believe there is a wide field for expressing opinions which I know are varied and diverse; and eliciting comments at once various and important. I presume that most veterinary surgeons have been called upon by the Society or its officers to express an opinion as to cruelty or non-cruelty to horses, in cases where they themselves have felt incompetent to give an opinion of their own.

That there are different degrees of cruelty no one would, I think, attempt to deny; but when it becomes the duty of the veterinary surgeon (which it undoubtedly is) to define that degree, and be responsible for the acquittal or condemnation of probably a respectable, well-meaning man, then I say how great is that responsibility, and how extremely careful a man should be before expressing his opinion. If examination of a horse for soundness is important, how much more so is the examination of a horse as to its ability or inability to work, especially so when you have to substantiate your opinion in a public law court, and be open to public criticism, and perhaps censure. The difficulty with regard to a conscientious veterinary surgeon (of which I trust there are not a few) having probably to condemn, by his opinion, one of his best clients for an inhumane act, because he has been the indirect means of an animal being worked of which he unfortunately is the owner, is insurmountably great, not to say very unpleasant.

In the next place I ask, How many men are actually aware that they are committing an act of cruelty, or causing a poor dumb animal suffering, when their horse is lame and they continue working it? If there is such a diversity of opinions as to the existence or non-existence of pain in certain lamenesses, among professional men, how can it reasonably be expected that an untutored mind and an unprofessional eye can discern an act of cruelty in working a lame horse? I am not speaking of those cases where there is any margin or room for doubt—cases that are so flagrant and palpable to the ordinary observer as to be at once recognised as both cruel and inhumane; but, as I have stated, those cases where a veterinary surgeon comes to the conclusion, after fairly and conscientiously weighing the matter well, that it is an act of cruelty, when perhaps another veterinary surgeon would unreservedly say it is not; in other words, cases that admit of doubt. My experience with the Royal Society's officers has been somewhat large, and I cannot but say somewhat pleasant, as I have always found them courteous and obliging, and invariably willing to bow to my decision where they had previously formed an opinion of their own, and we happened to differ; also to give any benefit to a doubt that might arise. But in cases where proceedings are taken, and I have expressed it as cruelty, I certainly do object to the wording of the charge to the defendant, "That he stands charged that he on a certain date did wilfully and cruelly ill-treat a certain animal, to wit, a ——, by working the same in an unfit state." It is being charged with wilfully and cruelly ill-treating an animal that goes so much against the grain, and causes three-fourths of the defendants to plead "Not guilty." They knew their animal was lame; but to men fond of animals (aye! and I may say humane men, for I have met with such who have been charged for working lame horses, who would not give pain intentionally to any animal), I think it is especially hard to have a summons worded in the same manner as it would be in a case of revolting cruelty, viz., kicking, thrashing, or stabbing, I only mention this as a suggestion, thinking it requires remedying; for I am of opinion that the Royal Society should have some less expressive sentence in modified cases of cruelty.

Next, How can the disrepute in which a veterinary surgeon is naturally held, and the harm which it invariably does him, by appearing against his own clients, be done away with and remedied? This is a question worthy of consideration, for no one, I am sure, will deny that it does him an incalculable amount of damage. Could not neighbouring veterinary surgeons do each others' districts. It could not possibly matter to the Society, and I think, or rather I should trust, that in an enlightened age like our own, with our common profession coming so prominently to the front, that all petty jealousies and ill-feeling would be dispersed and etiquette studied in every respect.

Now we come to the great question, and of all others the most important, viz., What is cruelty, and what is not cruelty? I do not see why we should not have a compiled list of each; and the most expeditious way of obtaining the voice of the profession, is through the medium of our Veterinary Medical Association's discussion on the various ailments of horses, upon which the question, not of soundness or unsoundness, but of cruelty or non-cruelty, is likely to arise, and a professional man's opinion sought, would be of inestimable value to us all, as we should have a standpoint and a basis upon which to form our opinions, and thus avoid that flat and open contradictory evidence which is so often painfully apparent, and which so tends to bring our profession into ridicule and our science and ourselves into disgrace.

Among the principal maladies from a point of cruelty or non-cruelty light, are Contracted Feet, Side-Bones, Ring-Bones, Chronic Laminitis, Simple Corn, Sand-Crack, etc.; wounds deep or superficial in the vicinity of joints, abrasions either in contact or not with the harness, cases of bad Roaring and Broken Wind, respecting all of which I have no doubt veterinary surgeons differ in degree as to opinion. Then again, as to docking, which I myself look upon (although I believe cruel) as a necessary evil; also cropping dogs' ears and tails, and punching the ears of cattle and sheep for the purpose of identification. I attended at the police-court of a neighbouring city, about a month ago, for the Society, in a case of mutilation of ears of cattle; there being eight steers and two heifers, having each of them about two inches cut off the top of one ear and a punch three-quarters of an inch in diameter in the other. Professor Pritchard likewise appeared for prosecution. Would any professional man advocate such a plan for identification, especially so when there are other means that can be had recourse to for that object? Yet (although there was ultimately a heavy conviction) two of the magistrates showed unmistakable signs of biassed minds directly the case came on for hearing, making gesticulations and audible observations, which, to say the least, was ungentlemanly and unmagisterial; they evidently being of opinion that because it had been the custom of the country, therefore that custom should be allowed to exist unmolested. But the Bench ultimately ruled differently. I will not take up more of your valuable space. I trust this will provoke discussion in your Journal, which will be beneficial to the profession at large, and place us in a better position in the witness-box and in the eyes of the public generally.

Yours, etc.,

Margate, Kent. E. Lyne Dixson, M.R.C.V.S.

NEW REMEDIES.

Sir,—My letter on "New Remedies" has evidently excited Mr. Maynard's indignation. I hope he does not feel it more keenly being from a junior.

If I have in any way wounded his feelings I am sorry, but I fail to see anything in my letter which I should feel justified in cancelling. I am rather glad than otherwise that I penned the letter, as it has afforded Mr. Maynard an opportunity of defining his position, and giving a positive denial to the supposition that his article was intended as a "puff" for the nostrum. I candidly admit I thought it was an extol for some particular preparation, and I can assure him I was far from alone in this belief; and I submit that any one who unbiassedly read the article, could scarcely fail to be impressed with the idea that it was intended as an advertisement. The language in which the whole article is couched is highly suggestive; so also is the fact that Messrs. Mackey's representative, some weeks prior to the appearance of the article in question, was pushing the preparation very hard: he said it was undoubtedly destined to be the "tonic of the future," and that a leading

article on it would appear in the April issue of the Journal—facts which go to show that the firm were quite conversant with the article prior to its appearance in print, and, at the same time, carry with it a suggestion which it is difficult to ignore.

It is perfectly true that articles extolling certain nostrums have appeared in medical journals, and so long as they are written in good faith there is no legitimate objection to their publication ; but, unfortunately, many have only gone under colours as advertisements, and this is no argument why the practice should be further extended to veterinary literature. If our neighbours err, that is no reason we should do likewise ; it should rather prevent us falling into the same error.

The fourth paragraph of Mr. Maynard's letter I should rather leave to less partial judges than I should probably be, of my own "small experience" ; and simply add that my experience is probably not so "small" as Mr. Maynard is disposed to think.

It is difficult to understand the practice of medicine in the past, if no reliable tonic has been known till the introduction of the Mist. quinquin. comp. ; and it is the more mysterious still when this unique mixture is composed of agents which have long been well-known and in daily use, especially Nux vomica and the Cinchona alkaloids. Dialyzed iron is a more recent preparation, it is true ; but to my personal knowledge it has been used since 1878. In Mr. Maynard's article we are told he tried "every conceivable drug classed as a tonic," and in his letter he implies an equally extensive experience of combinations. Is it that the efficacy of this nostrum lies in the fact that its quantitative composition is a secret? or is it that the ingredients used are in some fixed and definite quantities, producing some new compound having properties entirely different from any or all of the constituents? Perhaps Mr. Maynard can solve this question, and offer some explanation of its *modus operandi* as a therapeutic agent, and also prove his statement "that quinquinine is of greater value therapeutically than quinine."

If I had scandalized Mr. Maynard I should feel extremely sorry, and humbly apologize ; but I fail to see any scandal in one member of a profession (even an assistant) forming his own opinion, even though it may not coincide with that of others. I hope it isn't that Mr. Maynard objects to an assistant forming opinions which differ from those of his elders. THE CURE OF A CASE OF PYÆMIA IN SIX HOURS IS A THING I DO NOT BELIEVE, and I contend I am perfectly justified in forming and expressing my opinion on such a point. The fact that the St. Bernard pup belonged to a Mr. Purchase, a resident at Romsey, and the other cases belonged to some person or persons not named, adds very little indeed to the history or interest of the cases.

Mr. Maynard states that as regards Messrs. Mackey's preparation, my argument utterly fails, inasmuch as the *formula* is *fully* set forth on the label. Well, I copy the following from one of Mackey's labels :—"Each fluid ounce contains two drams of Tinct. nuc vomica, with quinquinine and iron. Dose—one ounce, diluted." If this *fully sets forth the formula* to Mr. Maynard it does not to me. If it is necessary to know the quantity of any ingredient, I certainly think it is that of the basis which, according to Mr. Maynard's article, is quinquinine. Next in importance would be to know the quantity of the adjuvant, which in this case I presume is dialyzed iron ; and it would be of great importance to know the strength of the solution used, as owing to there being no official preparation, different samples contain varying quantities of peroxide ; one well-known firm advertise theirs as containing 12 grains in each fluid ounce, while Wyeth's is said to contain over 20 grains (25 to 27, I believe). The Nux vomica

tincture, which is the only quantity given, is evidently of little or no importance, as Mr. Maynard does not even mention it. Again, nostrums are not always what the advertisements profess, as in the specimen I examined, which was from a respectable London firm.

As to the paragraph quoted from my letter, pointing the moral of his article to a degree, I fail to see: evidently Mr. Maynard and I have different views as to the degree of, and the direction in which the moral points.

I do not say the three ingredients used are not a useful combination (qualitatively) in some cases, but Mr. Maynard has yet to teach the profession that these three agents (even in known proportions) are suitable, not to say necessary, for all cases requiring tonic treatment, before this nostrum occupies the enviable position in therapeutics which he unhesitatingly declares it will.

I am somewhat surprised Mr. Maynard should have found it necessary to cavil at my *nom de plume*. I consider I have a perfect right to employ whatever *nom de plume* I please. I am, however, unaware of having in any way altered, modified, or even used the Greek alphabet, and if this did not resolve itself into a purely philological question (which is scarcely suited to the aims of a veterinary journal), I don't think it would be difficult to convince even Mr. Maynard of the propriety of spelling Pharmacon with a *c*, as well as several other pharma*c*ological terms.—

Yours, etc.,

June 3rd, 1882. "PHARMACON" (not Φαρμακον).

DEAR SIR,—In justice to Messrs. Mackey and Co., I would state that the "tonic mixture" I examined was not theirs. I would also thank them for the offer to send me a bottle of their preparation for trial; but when I have occasion to administer the three agents composing it, I prefer to do so in known proportions. As to a sample for analysis, since writing my previous letter I have seen and examined their preparation.

Yours truly,

June 5th, 1882. "PHARMACON."

RABIES AND HYDROPHOBIA.

DEAR SIR,—The enclosed cutting from one of our newspapers* is a

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* SHOCKING DEATH FROM HYDROPHOBIA.

A melancholy case of death from Hydrophobia has occurred this week, the victim being Mr. Charles Arthur Hardwick, aged twenty years, son of Mr. Hardwick, the well-known farmer, of Hangleton House, Portslade. An inquiry into the circumstances was held in the Museum at the Sussex County Hospital, on Wednesday afternoon, before the Deputy Borough Coroner (A. Freeman Gell, Esq.), deceased having been removed to the Hospital last week.

The first witness called was Mr. Henry New, surgeon, of Preston, who stated that he was on a visit to the family of Mr. Hardwick. He was taking a walk with the deceased about the farm, at eleven o'clock on the morning of the 28th of March last, when the wife of the groom called to him, stating that a dog was hunting the sheep in the next field. Deceased jumped over the wall and eventually caught the animal by the collar with his right hand. He stretched out his left hand, to take it up in his arms, as it was a small dog not larger than a cat, when, as he did so, the dog bit him on the ball of the thumb of the left hand. Deceased dropped the animal, which again ran after the sheep. It had taken hold of several, and now caught hold of several more; when some of the farm labourers, finding it a troublesome little thing—not thinking, however, there was anything the matter with it—killed it with a stick.

The Deputy-Coroner: What sort of a wound was it that it inflicted upon deceased?

melancholy proof of the presence of Rabies here at Brighton, and I fear not the last we shall hear of the disease. This dog was not among the thirty-five cases I spoke of in the April number of the Journal. Six more have come under my observation since then, the last being only a fortnight ago. This dog, which belonged to a furniture dealer here, had been under the treatment of a bird-fancier for several days, he being of opinion that the dog was suffering from worms. This same "dog doctor" had attempted the extraction of an imaginary bone from the throat of the fox-terrier I sent to the Royal Veterinary College, and which was destroyed by Prof. Robertson on account of his great violence. Surely the Veterinary Surgeons' Act will be a benefit to such pretenders, if only in protecting them from their own ignorance.

The general indifference to dog practice among qualified veterinary surgeons, is no doubt largely the cause of the existence of a race of pretenders who have the assurance to make charges which many country veterinarians would consider handsome remuneration. That special instruction at college on canine matters is much required, Mr. Metherell has, among others, frequently urged, and I venture to assert that without *practice* a veterinary surgeon cannot successfully treat the diseases of dogs. Comparison to the horse is of little value, and posology inaccurate.

Mr. New: A deep penetrating wound on the ball of the thumb. There were, in fact, two or three bites.

Did you attend to him?—Yes; in less than five minutes I applied caustic, not thinking there was anything the matter with the dog, but as a precaution. I applied it to the very bottom of the wound.

How soon was he taken ill after that?—He was as well as usual up to the evening of the 26th of May, when, about seven or half-past seven o'clock in the evening, he complained of a general heaviness and headache, and said he should like to go to bed. His brother, who slept with him, said that in the night deceased complained of being thirsty, and got up to drink some water, which he threw all over the place. In the morning his sister made a cup of coffee and took it to him, but he could not drink it. He tried to do so, but immediately spurted it out, and could not swallow a drop. Miss Hardwick became frightened and ran down to me. That was on Saturday, the 27th. I tried to give him a pill; but it came back in the same way. I also gave him some milk, which he tried hard to take, but it nearly choked him. He jumped out of bed, and I immediately saw what was the matter with him. As I did not like to take the case in my own hands, Mr. Hardwick sent to Brighton for his medical man, Dr. Ross, who came with Dr. Taaffe; and they thought it better that deceased should be sent to the Hospital.

Have you seen him since he has been in the Hospital?—Yes; twice. I saw him about three hours before he died.

Mr. Inskip (Foreman of the Jury): Who did the dog belong to?

Mr. New: We don't know.

Were any of the sheep affected?—No; it was such a very little black-and-tan thing—a pet dog—that I don't suppose its bites penetrated the wool.

Mr. Bernard Scott, House Surgeon of the Hospital, stated that deceased was admitted about five o'clock on the afternoon of last Saturday, suffering from the symptoms of Hydrophobia. He gradually got worse and died on Monday, about forty-eight hours after he was brought in.

By the Coroner: There was no doubt that death was the result of Hydrophobia.

Mr. Inskip: Has any *post-mortem* examination been made?

Mr. Scott: Not a complete one; but we have examined the upper part of the spinal cord, where results are generally looked for in such cases, and the examination corroborated our opinion.

Are there any marks about the body?—None of violence, except those which he inflicted upon himself.

By the Coroner: As a rule, from experience in such cases, the symptoms of Hydrophobia develope themselves about two months after the injury has been received.

There were other witnesses present who could speak to the injury and to the destruction of the dog; but the Jury, being satisfied with what they had heard, returned a verdict to the effect that death resulted from Hydrophobia.

Without for a moment wishing to detract from the value of such a pharmacopæia as Tuson's, I may say the doses are adjusted on a scale commensurate with the size or weight of an average dog as compared with the horse or man, and not upon the results of experiments.

I am, etc.,

Brighton, *June 5th*, 1882. HAROLD LEENEY.

SEWAGE GRASS.

SIR,—For the information of your inquirer "Epsom," in last month's Journal, I send you the analysis of milk obtained from forty to fifty cows, stall fed on *sewage grass* (they having no hay or straw and *not* being turned out to graze). Their daily ration was about 1¼ to 1½ cwt. of grass, with 2 lbs. each of palm-nut, cotton cake, and bean meal. The milk and butter being consumed in the fashionable town of Leamington is a sufficient proof of the excellence of its quality. Corroborative evidence could be obtained from the British Farmers' Dairy Company. Yours faithfully,

Warwick, 20*th June*, 1882. EDWARD STANLEY, F.R.C.V.S.

[*Copy.*]

County Analyst's Laboratory,
Temple Street, Birmingham.

June 2nd, 1882.

Dear Sir,—The following are the results of my analysis of the sample of milk sent by you as received here on 31st ult. :—

Solids—not fat	9·09	per cent.
Fat	4·37	
Total Solids...	13·46	

These figures show the milk to be of excellent quality and rich in fat.

I remain, yours faithfully,

Mr. D. Tough, Manager A. BOSTOCK HILL.
Lord Warwick's Heathcote Farm, Warwick.

ARMY VETERINARY DEPARTMENT.

DEAR MR. EDITOR,—I know that you are always kind enough to publish in the VETERINARY JOURNAL anything that is wished for by us, so that it may be brought to the notice of those in authority.

The question I would now ask is this: Is the cocked hat a suitable head-dress for the veterinary officer? When we were regimental we wore the head-dress of the corps to which we belonged, at least in the Artillery. I cannot speak for certain as to what was worn in the cavalry, never having served in it; but, under the new regulations, I believe we have to don the unsightly and, I am informed, uncomfortable and unserviceable cocked hat. I know this head-gear would be greatly disliked by many veterinary officers, as they have no desire to be mistaken for Generals or "Aides," which I hear has occurred on some isolated occasions, when the veterinary surgeon has appeared in it, making him feel anything but comfortable; and when passing a guard he hears the words, "Guard, turn out!" and to the uninitiated the poor fellow would be terribly perplexed what to do. And I am sure our chief, who has done so much for us, and is always ready to make us as comfortable in the Department as circumstances will admit, when he is made aware of our utter dislike to the unsightly head adornment which we shall soon have to supply ourselves with, if some steps are not taken to prevent it, will, I am

sure, advise the authorities to give us a head-dress we could wear with comfort, at the same time that it would be serviceable and look smart and soldier-like.

"TOPIE."

MUCO-GASTRO-ENTERITIS IN CALVES.

SIR,—I quite agree with Mr. Thomas Campbell, of Kirkcudbright, that the disease described by him under the above designation is neither Tubercular Stomatitis, nor even of tubercular origin. The truth of this is but too evident if we accept as correct the details of his typical case; but, at the same time, I must be allowed to remark that neither Mr. Campbell nor his numerous readers will find it an easy matter to discover from his communication what he actually makes out *his* disease to be. The only thing plainly observable is the heroic way in which he seems to dispose of his patients—in this case a Galloway bull-calf from a prize stock. After an examination and consideration of the case he kills his patient and makes a—*post-mortem!*

I don't intend wasting space entering into a criticism of the minutiæ of his *post-mortem* appearances and his deductions therefrom, but will confine myself to two extracts from the same.

1st. In his *Microscopic Anatomy* he says:—"After many careful examinations, under different objectives, of the sections of the tongue, I have come to the conclusion that the curd-like deposit is neither more nor less than coagulated saliva and mucus."

2nd. In his *Pathology* he explains the causation of the mouth lesions in this way:—"The unhealthy, acid, acrid, and offensive fluid contents of the stomach are sent freely into the mouth by regurgitation. Constant contact and mixing with the copious secretions of saliva and mucus in the mouth bring about a coagulation of the fluids; the coagulum is deposited on the cheeks and tongue, and its presence, by interfering with the natural functions of the parts, leads to absorption of the mucous membrane."

These statements are quite at variance—irreparably so. In the one the deposit consists of coagulated "saliva and mucus," while in the other it is decidedly a coagulation of "the fluids," which fluids consist of the "fluid contents" of the stomach coagulated by coming in contact with the saliva and mucus! The incongruity of these statements is simply ridiculous, more especially when taken in connection with Mr. Thomas Campbell's severe animadversions on my theory of the Tubercular nature of the peculiar Stomatitis so often described in these pages.

Mr. Thomas Campbell might pertinently be asked to answer the following queries, namely: (1) How does the saliva and mucus become coagulated? (2) What reason can he give for the coagulated saliva and mucus becoming attached to tip of tongue?—a most unlikely position, the almost perpetual motion being much against any coagulation. (3) Of what did the unhealthy and offensive *fluid* contents of the stomach consist which were so freely regurgitated into the mouth? (4) How did the mucus and saliva coagulate these fluid contents of the stomach?

I need not proceed, however, with such queries, as it is quite evident that Mr. Campbell's deductions consist of mere impossibilities, the climax being reached when he asks us to believe that the mechanical pressure of these supposed (but utterly impossible) coagulations upon the mucous membrane of the tongue causes absorption of the said mucous membrane and subjacent tissues!

In Mr. Campbell's typical case the deposits inside the cheeks and at the tip of the tongue consisted "of a whitish yellow material of the consistence of newly-separated curd," which he easily removed with the finger. On *post-mortem*, immediately after, he found that the stomach "contained a large

quantity of a greenish-coloured fluid," part of which, according to his *Pathology*, was regurgitated and went, by coagulation, to form the whitish yellow coagula found in the mouth ! The hypothesis is quite untenable.

Any one who has come across the peculiar stomatitis described by me, whether tubercular or gangrenous, will at once acknowledge the impossibility of removing the deposits with one's finger, or wiping them off with a towel ; they can only be got rid of by severe scraping or cutting. Besides, how does Mr. Campbell get over the ravages of the disease at the anterior part of the lower jaw, where several incisors have often to be extracted? I suppose he would make a clean sweep with a towel !

In the VETERINARY JOURNAL for April last, I related several cases of Tubercular Stomatitis recently occurring in practice. The first case was a calf on a large farm, and here *five* other cases followed within a short time after. The fourth case occurred in a ten-months-old stirk, anterior part lower jaw ; within a week another stirk, same age, was attacked in like manner at the same farm. Comment is needless.

Mr. Thomas Campbell winds up his communication with a few aimless remarks on Tuberculosis. I have already said that I agree with him in denying that the "disorder in calves" (described by him) can have any "connection with Tuberculosis ;" but when he says that "Tuberculosis is seldom seen in young subjects," he is merely promulgating what is not true, and his seventeen years' practice and experience are absolutely worthless to build an argument upon if he has only during that time met with one case of Tuberculosis in a young animal, and that animal even ten months and a half old.

Mr. Campbell must surely be conversant with the writings of Messrs. Fleming, Walley, and Gray. If so he will find they all coincide in saying that young animals are especially prone to Tubercle. In Mr. Fleming's "Veterinary Sanitary Science and Police," he will find (p. 371) that "young animals are more predisposed than old" to Tubercle ; and in the same writer's "Monograph on Tuberculosis," he will find that genuine tubercles were found in both lungs of "three aborted calves of three months !" If Mr. Thomas Campbell would only keep himself conversant with current professional literature, he would find that his ideas on Tuberculosis are not only false, but actually dangerous ; and I must candidly tell him that he has no right to make light of such a serious matter as the diffusion of Tuberculosis.

In conclusion, there was not the slightest necessity to refer to my communication, on "Tuberculosis in Calves," in the *Veterinarian* for November, 1881, as being "by a writer." That paper speaks for itself, and is entirely the results of experience and personal research ; and, more than that, is wholly in accordance with the most recent scientific publications on Tubercle, with, perhaps, the solitary exceptions of those emanating from Egypt and Kirkcudbright !—Yours, etc.,

A. E. MACGILLIVRAY, M.R.C.V.S.,
Veterinary Inspector.

Banff.

THE CERTIFICATE OF DISTINCTION.

SIR,—When you, as an examiner, commanded me to step forward and receive the congratulatory remarks of the board, upon my having passed with "very great credit," no little pride filled my breast, and I naturally thought that the "certificate of distinction," with which I was afterwards presented, was an honour conferred only on those who attained *great* credit.

It is five years since this tumult of joy took place in my bosom, and I find now that men who pass in the second order of merit receive the same certificate, and what seems to me worse still, I see by this month's Journal that

a student who was at the Royal Veterinary College all those years ago, and failed continuously to pass his "first," has now "starred" at one of the Scotch colleges—surely such a man is not a fair competitor with first year's students! After four or five years at the London College some sort of handicap is needed if a man is to compete with freshmen.

I am, sir, yours, etc.,

"VERY GREAT CREDIT."

TO CORRESPONDENTS.

"Rectus" has not sent his name. If he will do so (not for publication) his letter will appear.

NOTICE.

Morbid specimens for examination and report are received at the Brown Institution, Wandsworth Road, London. They should be sent as soon as possible after death, accompanied by a short written statement of the case. If decomposition is likely to set in rapidly, the specimen should be enclosed in a piece of cloth saturated with some preservative fluid—as alcohol. When sent by carrier, bodies of animals must be carefully packed in straw or hay, in a suitable box or hamper, and the carriage prepaid.

The Editor would feel greatly obliged if colleagues who have the opportunity would send: 1. Specimens of the so-called Tubercular Stomatitis; 2. Fresh specimen of bovine tubercle—a small portion, preserved in alcohol; 3. A mouse affected with *Tinea favosa;* 4. A small snip of living skin, affected with *Tinea tonsurans,* from a black horse.

Communications, Books, Journals, etc., Received.

Communications have been received from Professor Duncan, Toronto; H. Leeney, Brighton; "Very Great Credit"; T. W. Mayer, Aldershot; J. Dowling Allman, London; J. W. T. Moore, Liverpool; "Pharmacon"; R. Rutherford, Edinburgh; J. Ferris, A.V.D., Athlone; S. M. Wilson, A.V.D., Aldershot; A. Spruell, Dundee; A. E. Macgillivray, Banff; C. Morgan, Nonington; "Topie"; "Rectus"; A. W. Hill, London; Dr. Thin, London; E. Stanley, Warwick.

BOOKS AND PAMPHLETS: *H. Pütz,* Die Seuchen und Herdekrankheiten unserer Hausthiere; *A. Goubaux, G. Barrier,* De Extérieur du Cheval; Report of the Colonial (Cape of Good Hope) Veterinary Surgeon; Return in Pursuance of the Provisions of the 59th Section of the Contagious Diseases (Animals) Act for 1881, as regards Ireland; *S. Gamgee,* Vivisection and Human Surgery; *F. Kaiser,* Ueber Scabies bei den Haussäugthieren speciell bei den Schafen; *P. Göring,* Die Veterinär-Polizeiver-waltung nach den reichsgetzlichen Bestimmungen; Proceedings of the Medical Society of the County of Kings; *G. Ponfik,* Die Actinomykose des Menschen; *Alb. Johne,* Ueber Geschwulste; Der Ausbruch der Rinderpest in Schlesien; *G. Müller,* Milch und Milchcontrole; Bulletin de la Soc. Centrale de Médecine Vétérinaire.

JOURNALS, ETC.: *The Journal of Comparative Medicine and Surgery; American Veterinary Review; Annales de Méd. Vétérinaire; Live Stock Journal; Squire; National Live Stock Journal; Archives Vétérinaire; l'Echo Vétérinaire; La Clinica Veterinaria; Journal de Méd. Vétérinaire et de Zootechnie; Recueil de Méd. Vétérinaire; Revue Vétérinaire; Wochenschrift für Thierheilkunde und Viehzucht; Deutsche Zeitschrift für Thiermedicine und Vergleichende Pathologie; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Lancet; La Presse Vétérinaire; Field; Repertorium der Thierheilkunde; Zeitschrift für Vergleichende Augenheilkunde; Der Thierarzt; Medical Press and Circular; Mark Lane Express; Agricultural Gazette; Tidskrift för Veterinär-Medicin och Husdjursskötsel.*

NEWSPAPERS: *Freeman's Journal; Irish Times; Lahore Civil and Military Gazette; Dublin Sport; Daily News; York Herald; Montreal Gazette.*

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STRINGHALT IN HORSES.*

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I FEAR the subject I have chosen to bring before you to-day, viz., "Stringhalt," will not be so interesting as I could wish, because our knowledge of its pathology is not sufficient to enable us to arrive at any definite conclusions. Nor are our interests in the malady very often aroused by our clients, for they, as a rule, consider (with perfect right, perhaps) that they know as much about it as ourselves, and therefore rarely ask our advice, or think of giving us an opportunity of studying the affection in its early stages, or of tracing any connections between it and other diseases or injuries.

I have, however, ventured to occupy your time with it from, perhaps, a very selfish motive, viz., that of learning something myself; and, also, because I think the less we know of a malady the more we ought to experiment, and interchange our views with each other about it, in the hope that some one will ultimately be fortunate enough to hit upon a sound theory, or at least one which cannot be objected to upon any scientific basis.

Our literature on the subject is neither large nor instructive, but such as it is, I have endeavoured to bring before you, in order that you may enlarge it. At any rate, I trust we shall find matter enough to occupy our thoughts and create a lively discussion.

* Read at the meeting of the Eastern Counties' Veterinary Medical Society on June 4th.

Name.—"Stringhalt" is the name by which this affection has been known for a very long time, and I do not think we can with advantage designate it by a more suitable one, until we are better acquainted with its pathology. However old and unscientific the name of a disease may be, I consider it is better to adhere to it, until we have some solid and scientific reason to alter it. In some parts of America it appears to have got changed to "Springhalt." In Germany they term it *Der Zuckfuss, Hahnentritt der Pferde;* in France, *éparvin sec.*

Definition.—Stringhalt may be defined as an abnormal action of one or more limbs, characterized by a violent flexion of all the ginglymoid joints of the limb (especially of the hock), whereby the foot is spasmodically raised, incompletely extended, and very frequently brought to the ground with increased force.

Animals and limbs attacked.—It usually affects one or other of the hind limbs of horses, and sometimes both: cases are recorded of the fore limbs being affected (Blaine's "Veterinary Art," and *Veterinarian* for 1869, p. 561). Donkeys are sometimes the subject of the disease (*Veterinarian*, 1869, p. 516); and one case (?) is mentioned of a cow having Stringhalt of the hind leg of the milking side (*Veterinarian*, February, 1842).

Distribution.—It is a common disease in England and America. "Nimrod" says in the *Veterinarian* for 1839, p. 516, that it is rarely seen in France. I am not able to say to what extent the disease does occur in other countries, but perhaps some here present may be able to enlighten us on this matter.

Shape of Hock mostly predisposed.—"Cow" (or sickle-shaped) hocks are more subject to this affection, and Dieckerhoff thinks this is due to the abnormal union between the tibia and astragalus preventing a full extension of the hock, which allows the fascia in front of the limb to shrink.

Pathological Anatomy.—Lafosse and other French authors found no pathological changes.

Professor Spooner, assisted by Messrs. Sewell and Ferguson, made a *post-mortem* examination of a racehorse named "Guilford," and found the crural and lumbar nerves perfectly healthy. "The sciatic nerve, where it escapes from the spine, was darker in colour, being of a yellowish hue; its texture soft, and its fibrillæ

somewhat loosely connected together. It was of its usual size. But on tracing it from the ischium, in its course through the muscles of the haunch, several spots of ecchymosis here and there presented themselves, particularly on that part of the nerve which is connected with the sacro-sciatic ligament. As the nerve approached the hock it assumed its natural colour and tone; and the fibres given off from it to the muscles situated inferior to the stifle joint were of a perfectly healthy character. On taking out a portion of the nerve where it appeared to be most diseased, it was found that the ecchymosis belonged to the neurilemma. It was confined to the membranous investiture of the nerve; for when the substance of the nerve was pressed from its sheath, it presented a perfectly natural character. The spinal cord was healthy, as were also the joints and articulations."

Professor Varnell noticed, in one particular case, "that the areolar tissue which invested the sciatic nerve, from a little below the sacral foramina, to the point where it gives off the lesser sciatic, was considerably thickened, and, as compared with the same covering to the nerve on the opposite side, was of a palish brown colour. He carefully separated the fasciculi of this nerve, but could not discover that its fibres had been structurely interfered with. Still, the altered and condensed state of the investing tissue may have been a source of persistent irritation when the limb was moved" (*Veterinarian*, 1863, p. 593).

Others have found anchylosis of the vertebræ, accompanied by a narrowing of the spinal canal and intervertebral foramina (Goodwin).

Renner found the sciatic nerve reddened, and the bursa on the trochanter major inflamed, enlarged, and thickened, and a new bursa formed on the ischial tuberosity under the muscularis semitendinosus.

Günther discovered this muscle to be much softer in the side affected, than on the sound side ("Myologie," p. 211).

Dieckerhoff says he found hyperæmia of the sciatic nerve in healthy horses bled to death, as well as in those affected with Stringhalt. All he could permanently detect was a hard and firm condition of the connective tissue (fascia). In order to

observe this, the tissue should be examined soon after death, otherwise it becomes dry, and is apt to be overlooked.

Resumé.—Thus we see the only lesions that have been found by investigators of this disease, are—1, Anchylosis of the vertebræ and its consequences, viz., a diminution in the size of the spinal canal and intervertebral foramina, with spicula and roughness of the bone; 2, Ecchymosis and thickening of the neurilemma of the sciatic nerve; 3, Various new formations, which have at times been thought to press upon adjacent nerve fibres, such as melanotic tumours, etc.; and, 4, a hard, firm condition of the connective tissue (fascia).

ETIOLOGY.

From the fact that Stringhalt has been found to attack horses which had suffered from an injury to the spine, causing anchylosis of the vertebræ, some have thought that during this healing process the spinal canal and the intervertebral foramen became smaller, and produced pressure on the cord, or nerves as they leave the cord, or that spiculæ of bone projected and stimulated the nerves (Goodwin). Percivall refers its seat to the *spinal marrow*, or to *the nervous trunks passing between it and the affected muscles:* an opinion, he says, "he was first led to adopt from having observed a broken-backed (chinked) horse exhibit all the characteristic signs of Stringhalt. It is not, however, necessary for a broken back to be present; for any other cause of irritation to this part would, we apprehend, induce the disease" ("Hippopathology," vol. iv., part ii.)

Professor Spooner, after making several *post-mortem* examinations of horses affected with this disease during life, came to the conclusion that Stringhalt was not referable to any diseased state of the brain or spinal cord, nor to any local affection of the muscles of the limb, but simply to a *morbid affection of the sciatic nerve.* As a consequence, the equal action of the muscles is destroyed. The flexors, which are naturally more powerful than the extensors, draw the tarsus on the tibia, and the tibia on the femur, bejond the position and movements of the joints, and then from the peculiar arrangement of the articulatory surface between the tibia and astragalus the hock joint suddenly

becomes flexed, producing the remarkable spasm of the limb.

Mr. Field considered idleness to be a cause of Stringhalt; and Mr. Youatt inclined to the idea, for he says, "long holiday of the flexors during standing, and the excessive stress on the extensors might cause a disproportionate accumulation of nerve-force in one or other of these systems" (*Veterinarian*, 1838).

Mr. Youatt thought he had discovered its cause when he found an enlargement of a ganglion on one of the branches of the crural nerve—as did also Mr. Sewell, when he discovered a cyst in the belly of the triceps abductor femoris muscle (Blaine's "Veterinary Art").

Professor Williams thinks its cause "is sometimes peripheral, as when a bone spavin presses upon the nerves of the hock, Stringhalt being then due to reflex action"; and goes on to say, "In grey horses, Stringhalt is occasionally due to a deposition of melanotic material in the sheaths of the great *crural* nerve;" and he inclines to the opinion that chronic Stringhalt, or that form of it which is not dependent on Rheumatism, arises from a congested condition of the nerves and their sheaths.

Mr. Reynolds, in a paper on this subject read before the Liverpool Veterinary Medical Society in 1869, says, "that some agree that the spasmodic action of Stringhalt partakes of a convulsive character. It may be that a group of ganglionic cells of the cord in connection with the motor nerves supplying the affected muscles are in such an abnormally excited condition, that in response to ordinary stimuli they transmit extraordinary impulses, and undue contraction is the result." He also says, "Stringhalt may be due to a tardiness of action in the nervous structures which supply the muscles engaged in extending the hock and limb in a backward direction, those whose function is immediately antagonistic to the muscles in which undue contraction takes place."

Some have believed it to be due to the pain caused by the friction of the tibia passing over an irritable ulcer on the astragalus (J. Busteed, *Veterinarian*, 1863, p. 585).

An increased development of the spine of the tibia (Villate, *La Clinique*, *Veterinarian*, 1845), a cramped condition, rheumatic

affection of the muscular portion of the flexor metatarsi, have been considered causes (Hochsetter and Hering), as well as shortening of the tendon of the peroneus muscle (Boccar, *Annales de Med. Vet. de Belgique*, 1845).

F. and K. Günther thought it might be due either to: (*a*) the pain of diseased bones or joints of the hock, although external spasm was not present; this form they called modified spasm. (*b*) Inflammation of the connective tissue and other diseases of the fetlock, coronet, and hoof, which they termed "false Stringhalt." (*c*) A disproportionate antagonism between the muscles supplied by nerves from the sacral plexus, and they called this "true or involuntary Stringhalt." (*d*) To atrophy of the gluteals, causing a weakness in them, and want of antagonistic power.

Renner says he knew Stringhalt to follow division of the tibial nerves, and Haubner observed it follow fracture of the trochanter major, but it again gradually disappeared.

The theory which I particularly wish to bring under notice is one which, as far as I know, is new to English literature, and is that of Professor Dieckerhoff, of Berlin. After he had made several *post-mortem* examinations, he came to the conclusion that the essential cause of Stringhalt was due to an irritation, shrinking, and shortening of the fascia, more particularly that portion of the aponeurosis which takes its course on the anterior part of the limb, and unites below the hock with the tendons of the extensor pedis. Under normal circumstances, this fascia, he says, principally acts as a check to the bending back of the fetlock and hoof, and until this check is necessary the fascia is yielding. In the healthy horse we may easily see this portion of the fascia become strongly tensed at the moment the foot is lifted from the ground and the joints become flexed; the hoof, as is known, springs back at this moment, from the elasticity of the ligaments at the back of the fetlock (and not, as is sometimes thought, by an active contraction of the perforans muscle). If we acknowledge this action in the healthy state, it will be seen that the check-action of the fascia comes into full play when the flexor pedis and peroneus are contracting, but as soon as an irritating process is set up in this aponeurosis, at the anterior part of the hock, it may become contracted, and, as a consequence,

will not allow (*a*) the hock to extend to its normal degree, and (*b*) will not permit the hoof and fetlock to flex to the extent it was capable of before the contraction took place. Moreover, after the aponeurosis has contracted it loses its elasticity. According to these anatomical connections, we learn that if the coronet and fetlock joints cannot be flexed, neither can the hock and tibio-femoral joints be extended. Thus the resistance which this fascia gives to the proper flexion of the fetlock joint must be overcome in some way, and this, he argues, can only take place by the animal violently raising the hock, which relaxes this tense fascia, and flexion of the fetlock necessarily follows.

The *fascia* is connective tissue, and, histologically, belongs to the lymphatic apparatus, and is predisposed to nutritive disturbances. It may become shortened from various causes, such as resting the limb, from long-continued lameness. This continual relaxation causes the fascia to atrophy, from loss of the necessary stimulus for the nutritive supply. On the other hand, this fascia may be shortened by continual overwork; as when an animal is lame in front, and the hind limbs take most of the weight of the body.

He goes on to say, that from these facts we may divide "Stringhalt" into, (*a*) The idiopathic or true form; (*b*) That form caused by Spavin, Ringbone, and other diseased conditions; and (*c*) The symptomatic form.

(*a*) *The idiopathic or true form*, is due to a shrinking of the fascia without any apparent cause; and if horses become affected with Stringhalt before they have Spavin, they rarely contract it afterwards, because the hock cannot be completely extended. It may attack one or both legs, and in various degrees, some animals only going a few paces so; others have this action occasionally, after so many normal steps; and some have a regular number of normal ones, and then a Stringhalt step.

(*b*) Stringhalt may be caused by Spavin, Ringbone, and other diseases, from the fact that the hock never is extended to its full extent, and when resting is generally flexed, and as a consequence the fascia shrinks.

(*c*) Symptomatic or false Stringhalt is that form which is induced by inflammation of the skin in any part of the limb, from

the hock downwards, as Grease, Laminitis, wounds, etc. These cause the limb to be rested, and as a result, the fascia contracts. He has observed many cases follow treads, especially when the extensor pedis tendon is involved.

Resumé.—From the foregoing account of the ætiology of Stringhalt, we learn that it may be due to :—

1. Direct stimulation of the nerve-centres, or nerves supplying the flexors of the hock. (Goodwin, Percivall, Spooner, Sewell, and Williams.)

2. To indirect stimulation of these nerves by reflex action due to painful affections of the joints, bones, etc. (Busteed, Günther, Williams.)

3. An abnormally excited condition of the nerve-centres presiding over the flexors of the limbs. (Reynolds.)

4. A tardiness of action of the nerves' centres, or nerves supplying the extensors of the hock. (Reynolds.)

5. Want of power from Paralysis in the antagonistic muscles of those used in flexing the hock.

6. Cramp of the flexor metatarsi. (Hochsetter.)

7. A rheumatic affection of the muscles. (Hochsetter, Hering, and Williams.)

8. Shortening of the flexor muscles of the hock. (*Peroneus*, Boccar.)

9. Loss of power in the extensors from atrophy. (Günther.)

10. Shrinking of the fascia in front of the limb. (Dieckerhoff.)

Thus we see the majority of authorities believe the affection is due to some derangement of the nervous system, others to the muscular system, whilst others refer it to the fascia of the limb affected.

Symptoms.—As soon as the weight of the body is removed from the limb or limbs affected, and the animal attempts to move it from the ground, the spasmodic flexion takes place, whereby the foot is, as a rule, brought up sharply under the body ; at other times, however, this action commences by the hock being raised perpendicularly, which at the moment gives one the idea that the limb is going to be thrown backwards instead of forwards, but the hock suddenly flexes and the foot is brought forward under the body. This peculiar action is, I believe, due to

the femoro-tibial joint being flexed to a certain extent before the hock; which, however, as you are all aware, can only take place to a very limited extent, because of the arrangement of the flexor metatarsi and gastrocnemii muscles and tendons; for when the tibio-femoral joint is flexed the hock must necessarily be so, and *vice versâ*. After the limb has been brought up to the body, extension takes place, but only to a limited extent; consequently, the steps are shorter than they naturally should be; the foot frequently comes to the ground with greater force than is natural to normal action, or, as Mr. Fleming puts it, "This free play is not limited to flexion only, but manifests itself also, to a certain degree, in sudden and forcible extension, when the foot of the affected limb comes to the ground with a highly magnified tread" (*Veterinarian*, 1863, p. 663).

The symptoms exhibited in this disease vary in degree to a very considerable extent. In some, slight cases only being visible during certain movements, as turning in some particular direction, and then the limb only being "*caught up*" to a limited extent. Again, the symptoms may only show themselves every few steps, and on some days worse than others. In aggravated cases the limb is not only spasmodically flexed, but is thrown outwards (abducted), the animal going with a straddling gait; whilst in others the flexion is so forcible that the fetlock is brought in contact with the abdomen, and the hair and skin are worn through—an ugly sore being the result. The foot may also strike the ground in the natural way, whereas in others it hits it hard enough to cast, and even break the shoes (see *Veterinarian*, 1838).

The pace the animal is required to perform has also a certain amount of control over the severity of the symptoms; for instance, a horse may walk tolerably well, but when put into the slow trot will snatch up the foot or feet affected, and when put into the fast trot or gallop the Stringhalt again disappears. Others may show it when walking.

Hertwig reports a very peculiar case, where the foot was spasmodically drawn up, rested there, and then brought to the ground slowly.

Course of the malady.—Stringhalt, as a rule, develops itself

slowly, and gradually becomes worse with age. Professor Williams says he has seen a very aggravated case occur in one night; this we must look upon as an exception.

The symptoms are much aggravated by injuries to the limb, by cold and other febrile disturbances. (Williams.)

Treatment.—Percivall said, "Stringhalt was never cured, either by nature or art; once Stringhalt, for ever Stringhalt." And in his day it appeared to be true; for the treatment that was adopted was neurotomy, which did not in most cases appear to do any good, and in those in which the spasmodic twitching was removed, the muscles became so atrophied that the beast was useless.

Boccar, however, appears to have been more or less successful by dividing the tendon of the peroneus muscle below the hock. He publishes the result of ten cases as follows: five cured, two improved, and with three it was useless.

Mr. W. Ernes, translating from the French, gives us the record of some of these cases, and I will read one as an illustration. "The subject of Case 1 was a six-year old bay mare. The affection was so severe that the animal hit her belly at every step with both hind legs. M. Boccar was led to perform the operation, because the extensors were so prominent over the hock. After the tendon was divided the affection on that side was no longer visible. The other side was then operated upon with the same success. The wounds healed in fifteen days. What is most remarkable in this case is, instead of the hock remaining sickle-shaped, as it was before the operation, it became straighter (*Veterinary Record*, vol. iii., 1847).

Brogneiz recommended cutting a piece out of the tendon. This Boccar seems to have done in some of his latter cases, with similar success.

Hertwig recommends division of the *tensor fascia lata*, a little below the external iliac spine, but with what success I do not know.

Dieckerhoff proposes a subcutaneous division of the fascia below the anterior part of the hock. The method of operating is to cast and secure the animal, with the limb to be operated upon uppermost. An assistant extends the toe forward, so that the fascia is tight near the tendon, and not next the skin. Make

an incision through the skin on the outer side of the metatarsal bone, about an inch-and-a-half to two inches below the hock. Then take the tenotomy knife, and introduce it slantingly into the wound, placing the left hand on the blade of the knife, which is held firmly with the right hand, whilst the thumb presses against the bone to steady it. The assistant now flexes the *foot*, which brings the fascia tight, and the operator cuts through it, but he must be careful not to divide the extensor tendon itself. It is not necessary to cut through the whole of the fascia, for it is better to leave a portion of it intact on the inner side of the limb, than to run any risk of dividing the *vena saphena magna*. Even if the vein is wounded, the hæmorrhage can easily be stopped by a compress. The after-treatment consists in placing a pad of tow and a bandage over the wound, to prevent the air entering. The wound generally heals in about five days or a week. When Professor Dieckerhoff published this account, he had only operated on two cases, and both successfully; but it requires further trial before anything positive can be said in favour of the operation.

He says, when the disease is caused by other maladies, these must be treated. Those cases which follow acute diseases, etc., or what he calls the symptomatic form, generally disappear when the disease (cause) is cured, and the limb is normally used; but if, in such cases, the disease remains for many months, then recourse must be had to the operation.

Jurisprudence.—Although horses may be useful for several years (Dieckerhoff), and even trained and win races (Youatt), still we know there is a tendency in the disease to become worse with age, and we can never prognosticate how rapidly this may take place. In many cases it does not appear to interfere with the animals' usefulness, yet it renders them less capable of attaining that degree of condition so characteristic of health (Reynolds). Moreover, in severe cases the animals become tired quickly, and consequently incapable of ordinary work. Therefore, I think, we must look upon Stringhalt in any form as *unsoundness*. Some have looked upon this affection simply as "an eyesore," and others have even believed it showed increased power. Even if this were true, we must, I think, agree with

Mr. Youatt that we do not like these irregular distributions of vital energy.

Hereditability.—Is Stringhalt capable of being transmitted from parent to offspring? I am not in a position to answer this question myself, but if it is due to any malformation or defect in the nervous structures, we can easily imagine its likelihood of being so. The only statement I can find on this subject is in the *Veterinarian* for 1869, p. 561, where Mr. Storrar states that he had seen some clearly-established instances in which Stringhalt was hereditary amongst a breed of cart-horses, all descended from a sire so affected. If this is correct, we ought to prevent, as much as possible, any sire or mare affected with the malady being used for breeding purposes.

"*Cruelty to Animals.*"—Lastly, I would ask whether it is "cruelty to animals" to work horses with Stringhalt? This, I think, depends to a great extent upon the severity of the disease and the work required of the animal. Stringhalt, in itself, we believe, is a *painless* affection, but when it is so far advanced that the fetlocks strike the abdomen, and cause abrasions of the skin, or when the limb is so abducted as to cause the stifle to come in contact with the shafts or pole of the vehicle, or when the foot is brought to the ground with such violence that the shoes are broken or cast, and the limbs and feet jarred, or when the action is so bad that the animal is distressed by the work required of it, then we consider it is cruelty to work the beast.

Criticism.—When we review the foregoing theories of Stringhalt, we cannot help being struck with the truthfulness of the phrase Mr. Youatt used when lecturing upon this disease before the University of London in 1835, when he said, "Many ingenious but contradictory theories have been advanced to account for this malady." For what can be more ingenious than the fascia theory of Professor Dieckerhoff, and what more contradictory than the theories of Spooner, Busteed, and Boccar? However, before we can arrive at any satisfactory conclusions respecting such an obscure affection, this must necessarily be the case.

I will, then, with your permission, consider, as far as I am able, the various theories that have been advanced, together with the

pathological lesions, symptoms, and methods of treatment, which have occasionally been attended with beneficial results.

"It seems natural," says Percivall, "to refer the affection to the nervous system, from the fact that the animal loses all control of the limb from the moment the foot has quitted the ground." Most English veterinarians are of this opinion, and support the idea that it is due to some direct or indirect stimulus applied to the nerve centres, or nerves supplying the flexors of the hock and stifle; and they have endeavoured to substantiate their views by seeking for lesions which could act as the necessary stimulus, such as ossification of the vertebræ, spiculæ of bone either at the foramen where the nerves pass out, or at the hock, and various other new formations in connection with the nerves; whilst others have thought they had discovered sufficient changes in the neurilemma to account for the stimulus. Some have considered they could trace a distinct connection between an injury, the disease, and *post-mortem* lesions. Thus Percivall tells us, "he knew a case to supervene immediately after fracture of the vertebræ," and Goodwin, before him, entertained similar views.

Now, I would ask you how far can such stimuli as these be considered as the cause of Stringhalt?

"Experimentally, we know," says Professor Varnell, that "if the *anterior* tibial nerve be laid bare at the part where it crosses the peroneus muscle, about an inch and a half below the head of the fibula, and stimulated by pinching it with a pair of forceps, the muscles it supplies, viz., the peroneus, flexor metatarsi, and extensor pedis, will spasmodically contract, as in Stringhalt. But wholly divide this nerve at the point alluded to, and in a few hours Stringhalt will have subsided altogether, these muscles being paralysed. He, therefore, thought that to cause Stringhalt, some of the fibres of the sciatic must be suddenly irritated, and also that the muscles alluded to are those which are involved in producing this phenomenon." (*Veterinarian*, 1863, p. 592.)

In addition to this experiment, we must also bear in mind, that if a nerve be stimulated in this way it soon becomes tired, and ceases to respond to the stimulus applied; and if the stimulus is not discontinued, the nerve becomes permanently injured (that is, it is paralysed).

Why should not this latter physiological fact be the same in all cases where local stimulation is applied? Some may answer this by saying, that the nerve can be stimulated longer when bathed by the normal fluids of the body and is intact. Be this as it may, it appears to me a very delicate kind of healing process, for the spinal canal or the intervertebral foramen to close just sufficiently, or for a new formation, such as a spicula of bone, to be formed just large enough to produce the amount of stimulus required for such action.

Moreover, we should imagine such irritants would set up inflammatory action in the nerve, in which case it would be difficult to understand, as Professor Dieckerhoff suggests, "how a *neuritis* could cause a permanent increased impulse to the flexors of the limb. Inflammation of nerve is a very painful affection, but Stringhalt is not; and we cannot imagine how an inflammatory irritation of a nerve or its sheath can induce a stronger contraction of the muscle or set of muscles it supplies during work, whilst at rest nothing of the kind can be seen."

Did Professor Spooner consider the ecchymosed condition of the neurilemma of the sciatic nerve to be inflammation? If so, the above criticism is strong evidence against its correctness. Again, Professor Spooner tells us "he never dissected a single case of Stringhalt in which he did not meet with disease of this nerve" (Percivall's "Hippopathology," vol. iv., part ii., p. 385); but Professor Dieckerhoff "has examined numerous anatomy and other horses which had been bled to death, and found this nerve to be hyperæmic without the animal showing the slightest trace of Stringhalt during life." As these statements are made by equally good observers, we must conclude that this condition of the nerve has nothing to do with the production of Stringhalt; unless some material difference can be detected (microscopically or otherwise) between the ecchymosis found by the one and that detected by the other.

With regard to any ulcerative disease of the joints being likely to produce Stringhalt by reflex action, we may, with advantage, quote Professor Varnell's argument upon this point. It is as follows:—"Can we conceive that an ulcerated hock is likely to be the permanent cause of Stringhalt? Is the ulcer to remain

without an extension of its ravages year after year, producing this peculiar phenomenon, without any other inconvenience to the animal? Would not the ulcer, from its tendency to spread, gradually involve the whole or greater part of the articular surface of the bone, and the horse, therefore, become so acutely lame, that he could not bear the slightest weight upon the limb? Or, should the ulcer chance to heal (which is barely possible), and the part become covered with a dense smooth deposit (eburnated), would there then be Stringhalt?" And he goes on to say, "that we may safely banish from our minds the idea of articular ulceration being the cause of Stringhalt" (*Veterinarian*, 1863, p. 593). Mr. Fleming also corroborates this by saying, "One thing is certain, that ulceration cannot exist in any articulation of the extremities, for even a brief space of time, without causing changes which seriously modify locomotion, and induce symptoms and manifestations of pain, which are not observable in, or at any rate are very dissimilar to those of, Stringhalt" (*Veterinarian*, 1863, p. 664).

The supposition "that the ganglionic cells of the cord in connection with the motor nerves supplying the flexor muscles of the hock and stifle being abnormally excited" accords, says Mr. Reynolds, "with the idea that the motor power for each set of muscles is supplied by a special and distinct group of nerve-cells. The correctness of this assumption is supported by the fact that the spasm frequently diminishes in violence after several flexions of the limb have been made, for it would appear that these preternaturally excited nerve-cells after a period of repose, have a superabundance of motor power, as it were, stowed up in them, or in other words, rest renders them more irritable; but after the increased irritability has been in a manner discharged in the production of a succession of moderate contractions, ordinary stimulation only produces normal action, until a further period of rest under undue stimulation has again rendered the cells abnormally excitable."

By this theory we must acknowledge that the animal has control over moving the limb, but does not seem to be able to regulate the force. This agrees with the symptoms observable, and so far as flexion is concerned, but it does not account for the

limb being brought to the ground with increased force. As this is not constantly present, it might be accounted for by the fact that the nerve-centres presiding over the extensors are sometimes similarly excited ; or that the animal voluntarily brings these muscles into action with greater energy to overcome the extensive flexion which preceded their action. Moreover, the treatment which has occasionally been successful, viz., division of the peroneus muscle (Boccar), and the fascia (Dieckerhoff), agrees with this theory to a certain extent, for we may say the success was due to the flexors being just sufficiently weakened to prevent the muscles acting so energetically to the stimulus they received. We are not told whether the foot in these successfully treated cases was brought to the ground with increased force. Should this have been the case, it would be difficult to see how, by weakening the power of the flexors, the increased impulse given to the extensors should be also weakened. But if the latter theory given above, viz., that this force is not due to an involuntary increased nervous impulse, but to a response of the will to overcome excessive flexion, we may account for it by the fact that the animal has no need to exercise its will to overcome it, because it no longer exists.

There is yet another possibility (as Mr. Reynolds pointed out in his paper) of Stringhalt being of a nervous origin, viz., that there is a tardiness of action of the nerve-centres presiding over the muscles, or, as I understand it, a defect of co-ordination, or loss of balancing power, in the nervous centres supplying the limbs affected. The animal, as is remarked above, seems to be able to set the limb in action voluntarily, but once the stimulus is given the effect is involuntary, that is, the animal loses control from the moment the foot quits the ground. The same loss of control seems to be associated with extension in many cases. If Stringhalt, however, is due to "loss of co-ordination," how can we account for division of any of the tendons or fascia occasionally curing the effects ?

The hypothesis of Stringhalt being of *muscular origin*, (*a*) from "*want of power*" in the antagonistic muscles to those which produce this catching action of the limb from atrophy, is, I think, not substantiated either by observation of the muscles

themselves, or of the symptoms of the disease; for, as far as I am acquainted with the muscles of limbs so affected, they show no signs of atrophy at all, and in those cases where atrophy of these muscles has occurred, no signs of Stringhalt were present. (*b*) That Stringhalt is due to *cramp* of the flexor metatarsi is, I think, very unlikely, because cramp is an acute, painful condition, and does not show any symptoms like those we find in Stringhalt.

If it is admitted that a shortened condition of the peroneus tendon can produce Stringhalt, we shall find some difficulty in accounting for the foot being (in some cases) brought with such force to the ground; unless we argue (as has been done), that it is to overcome the resistance given to the foot reaching the ground. However, I think you will agree with me, that the peroneus takes but a small share in flexing the hock, therefore it cannot play such an important part in producing this malady. And if division of its tendon has been attended with beneficial results, it ought to be attributed to the reason given above, rather than to any direct loss of strength in the muscle itself.

Professor Dieckerhoff's theory, that the limb is forcibly flexed in order to overcome the check given by the shrunken fascia in front of the limb to flexion of the fetlock, and that the limb is brought to the ground with increased force to assist the hock in being extended, is upheld by the symptoms, for both flexion and extension—as a rule—vary in degree with each other, the stronger the one the more forcible is the other. Also his treatment, so far as it goes, tends to confirm its correctness.

As will be noticed, his argument is based upon the idea that the fascia unites with the extensor pedis tendon a little below the hock, and through this acts as a check to flexion of the fetlock. Now, are we prepared to accept this action being normally present? For myself, I very much doubt (although I do so hypothetically) if the fascia is strong and unyielding enough for such action; and even if it were, and did become shortened, one would imagine that in time it would become stretched again, so as to allow of normal action taking place. Again, when this fascia was divided, how was the limb prevented from being rested? For if this were not done, the fascia would

quickly unite again, and make it shorter than before, so that instead of the operation being useful, it would be just the opposite; but how can we account for the operation being successful, as he says it was in two instances?

There is yet another mechanical theory I should like to bring before you, which might possibly account for this affection, and indicate, if not the actual cause, at least an accessory to it. Is there any peculiar arrangement of the bones, ligaments, or tendons of the horse's limbs to account for any especial action taking place in them which is not seen in other species? We are all probably acquainted with the anatomy of the part, but to refresh our memories, I will give a rough outline of it, so far as this peculiarity is concerned. At the anterior part of the limb there is a tendon running from the lower part of the femur to the upper part of the metatarsal bone. This, by English anatomists, is considered to be part of the flexor metatarsi muscle, but to all intents and purposes it is nothing more than a ligament, for it has few muscular fasiculi in the horse (although in cattle and swine it is a well-developed muscle, distinct from the flexor metatarsi). It takes its origin in unison with the extensor pedis at the lower part of the femur, and courses its way down the front of the limb, and at the hock forms a loop for the tendon of the flexor metatarsi (proper) to pass through it. It then divides into three main branches—the external one becomes attached to the os calcis, the centre branch to the metatarsal and cuboid bones, and the internal one to the cuneiform and internal small metatarsal. At the *posterior* part of the limb we find the gastrocnemii, especially the external, which arises from a fossa at the postero-inferior part of the femur, and becomes inserted at the point of the os calcis. Thus we see we have two tendons (one anterior, the other posterior) acting as ligamentous cords from the femur to the bones below the true hock joint. The effect of this is to keep a steady unity of action between the tibio-femoral and tibio-astragalean articulations, or, as I pointed out at the commencement of this paper, by this arrangement the one joint must follow the action of the other. Now, what would be the result if the anterior tendon became unnaturally shortened? The hock would have a tendency to

become sickle-shaped, and the femur to straighten on the tibia. The effect of this alteration in shape would be that the flexors of the tibio-femoral and hock joints would have a greater power to flex these joints, without any extra nerve stimulus or exertion of muscular power being requisite, and the extensors of these joints after strong flexion would have increased force given to them, and the foot would be brought to the ground with more than natural force. If this argument be correct, we see that, owing to this peculiar arrangement, a slight alteration in the tensity of these ligaments (tendons), an increased power is obtained both for flexion and extension, without any alteration in the muscular or nervous systems. It is quite possible, also, that the peculiarity of the tibio-astragalean articulation, with its ligaments, may have something to do with this extraordinary action met with in horses.

If, however, Stringhalt is due to any mechanical defect of this kind, it will be hard to account for it in those cases in which the symptoms are only occasionally seen, and also for division of the tendon or the fascia now and then regulating the action.

In conclusion, I may say that whatever may be the cause of Stringhalt, we cannot expect *neurotomy*, in any form, to be attended with beneficial results, since the only consequence of division of the nerves is paralysis of the muscles these particular nerves supply. If we wholly deprive any muscles or set of muscles of action, the treatment is worse than the disease. What we wish to do is to *weaken* their action, and this seems to be best obtained by dividing their tendons, and preventing union taking place too rapidly.

Finally, I beg to thank you, gentlemen, for listening to this somewhat lengthy, and I am afraid, uninteresting paper, so patiently. I must ask you to excuse any deficiency on my part to make it more so, owing to want of reliable and sound proof to substantiate any of the views proposed to account for this extraordinary unsoundness. Nevertheless, I have endeavoured to bring all the theories I could find on the subject before you, and to criticise them without prejudice. I now must ask each of you to give us the benefit of your experience and ideas, so as to illuminate, if possible, the darkness at present prevailing over the pathology and treatment of Stringhalt.

DISEASES AFFECTING THE LIVER OF HORSES.*

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DISEASES of the liver of horses being more prevalent in India than is generally evidenced in temperate climates, I shall confine my observations to the various phases that have presented themselves to my notice in that country. At the same time, the few remarks I have to offer, would indirectly apply to animals not located in the tropics. Considering the amount of liver complications we generally meet with, it has always appeared to me inexplicable that the subject has not evoked from professional men the attention it certainly demands. I do not profess to bring forward anything particularly startling, but shall as far as possible, attempt the elucidation of a few of the well-known facts so patent to those who have studied this subject. The ordinary appellation of the word "liver" is applied to almost any disease affecting that organ, but, perhaps, the commonest form is that recognised under the name of *Bilious Fever.* This is so well-known to Indian practitioners, that a description of it would to them appear futile, but there being others who have not witnessed the various changes which this disease assumes, I venture, without being wearisome, to describe them. Bilious Fever, at certain seasons of the year, and under peculiar circumstances, almost assumes an enzootic form, but seldom under judicious management proves fatal. The admissions occasionally to hospital are so numerous, that a regiment or battery is practically rendered *hors de combat.*

Several causes are brought into operation for its production; the prime factor being the sun and its baneful influences. The disease is most active during the latter portion of the hot season, and just prior to the commencement of the monsoon. At this time, the perspiratory glands are in an exceedingly active state, and anything which tends to check their action speedily manifects itself in some form of Fever. Another fruitful source of the disease, is the vile practice of washing horses; however

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grateful and comforting *pro tem.* to the animals which undergo this process, it is, as far as health and appearance go, open to great objection. Horsekeepers when left to themselves *will* include this part of grooming in their daily routine, but in almost every instance it is an excuse for idleness. No animal can really look well if persistently washed, and the sooner this pernicious system is banished from the stable the better alike for the owner and his slave—the horse. I grant, that in some cases washing may be a *desideratum;* if such is expedient, it should be done under cover and under proper supervision, and not, as is generally the case, in the purlieus of the stable and when a strong wind is blowing. Prevention of disease ought to be the aim of every veterinary officer. By his forethought, sanitary statistics are improved, and the state generally is benefitted, letting alone the *kudos* he gains for himself. Personally, I look upon sanitary science and its collateral branches as the most important part of our duties; and although its observance entails a considerable amount of trouble, I take it there is as much, if not more, satisfaction in being able to prevent as to cure disease. In ordinary routine, extreme measures are unnecessary, common sense only should guide us in our deliberations. In no case does a well-arranged system, carried out with mathematical exactness, pay better that in the prevention of Bilious Fever. Veterinary medical officers should make it their duty to watch the alternations of temperature, and always be on the alert and on the spot to suggest and advise the execution of the sundry preventive remedies, which amply repay them by the success attending their efforts. It is the practice in some parts of India, where out-door picketing is the "doxy," to clothe up the horses during the heat of the day, even in summer. A certain amount of protection to the spinal cord is absolutely necessary, but to clothe the whole body, as if the horse was in the steppes of Russia, I never could understand. This is a practice I have fought against wherever I saw it in existence, and happily have been the means of changing those dogmatic views so tenaciously adhered to by those who happened to be in direct command. By clothing the whole body the horse is rendered uncomfortable; he teems with sweat, which, judging from personal analogy, gives rise to a sen-

sation of weariness, and renders him liable to disease which would not otherwise manifest itself. The plan I find best, and which meets all requirements, is to fold the rug or *ghool* into four doubles and place it along the spine, the roller, if properly adjusted, is sufficient to keep it in position. This mode, besides affording more protection to the spinal cord, is decidedly economical, for in many cases the rug slips round and, instead of covering those parts its use was intended for, we find it being trodden under foot. In the plan I suggest, shifting is next to impossible. Another element which is conducive to attacks of this disease, is stripping the horses of their rugs for watering order, and then allowing them to gorge themselves with water, without afterwards taking the precaution to re-clothe them until stable parade is called. This, as the shades of evening approach, and the wind, especially when the weather is monsoonish, is somewhat lower in temperature, soon counts its numberless victims. I remember on one occasion ten cases being admitted to hospital in one day from this very cause. It requires no intellectual brilliancy to conceive what the result of this fault in stable management would give rise to. The dumb brutes can only by the various processes of rebellious nature, dictate to us the treatment they ought to receive. There they stand with coat erect, arched back, an occasional rigor, awaiting the time when the *syce* (horsekeeper) shall lazily insert his digits between the hair and conduct what represents the system of hand-rubbing. No wonder that nature rebels! Bilious Fever, then, is a disease which can in a great measure be prevented.

The *symptoms* vary, depending on the severity of attack and susceptibility of patient. In many cases we find an increased temperature of body, as indicated by the thermometer, but this is not an infallible guide. Horses there are which present a most dejected appearance, with a temperature nearly normal. The mucous membranes bear abundant testimony that the function of the liver has been materially interfered with, or, as some would have it, arrested; these vary from a greenish yellow with petechical spots having the appearance of extravasated blood, so that blanched or etiolated appearance so pathognomic of the milder form of the disease. The pulse presents in some instances

a most interesting feature, and one which requires extreme nicety in manipulation and observation. In severe cases the heart's action is so violent that its pulsation can be heard several yards away. This functional derangement is doubtless due, like the increased temperature, to the amount of bile or its component parts in the circulatory medium. The slightest noise on the part of the attendant causes the direst confusion on behalf of that of the patient. So extreme is this excitability, that I have seen an animal shake as if in the agonies of death. At this stage the heart's action seems, as it were, to have run riot. The pulse under such circumstances numbers about 150 per minute and very irregular. This undue irritability, after a few minutes' gentle treatment, softens down, and it is then we are enabled to correctly diagnose the true character of this case. This disturbance of the circulation cannot take place without having its untoward effects on the brain and its accessories; these are evidenced in the wild appearance of the eyes, shaking of the head, dilated pupils, involuntary movement of the lips, etc. In other cases of a somewhat milder type, we witness a drowsy appearance, with an evident desire to rest the head on any fixed substance, as if suffering from head-ache. Taking the average cases, that is, the milder forms, the pulse, although increased in frequency, does not present any of those erratic movements described above; it is more inclined to be febrile in character, with an occasional intermission, proving that, even in mild cases, there is some functional derangement of the heart. It averages about 75 per minute. In some instances, the opposite character of pulse is recognised, that is, it does not reach the standard of frequency; we find this in cases of cerebral complications indicated by the drowsiness before alluded to. This condition of pulse is but of short duration, and speedily gives way to one or other of the characteristics described. In almost all instances there is great depression, shown by the general demeanour of the patient. Torpidity of the bowels is one of the leading features, the fæces varying in colour from a deep-red to a light clay colour, and heavily coated with mucus. The tongue is inclined to be dry and hot, and displays signs of gastric derangement. The saliva, after a few hours, becomes ropy and adhesive in character.

The urine, perhaps, of all outward signs, is the one which should lead us to a true solution of our difficulty. Its colour is often what appears to be a greenish black, and stains the ground wherever it flows. It is passed scantily, and occasionally with difficulty, and possesses a Sp. Gr. of 1050 to 1070; when collected and at rest, a thick precipitate speedily appears, leaving the lighter portions of the same colour. At first I was somewhat puzzled to account for this peculiar state of urine, and jumped to the conclusion that I had a form of Hæmo-albumenuria to contend with. In order to ascertain its true character, I had recourse to various experiments, both chemical and microscopical. With the aid of the former I discovered, in some instances, the presence of albumen, with what appeared to be the colouring matter of the blood. The microscope revealed the presence of an undue amount of *uric acid* and urinary deposits generally. Having an idea that the colouring matter might be *Biliverdin*, bibulous paper was immersed, which on being dried gave the appearance of being glazed with a greenish yellow sizing. In a mild attack the urine is considerably heightened in colour, but not to anything like the same extent as in cases of a severer type. The Sp. Gr. is somewhat lower, averaging about 1050. The appetite is most capricious, ranging from partial to total loss, preference always being given to green fodder. Respiration is dependent on the severity of the attack, but "blowing" is an early characteristic of the disease. Pain is indicated by the horse looking round to his right side, with an occasional spasm, as if colic was present. The greater proportion of cases, however, show no disposition to pain, but merely an uneasiness which is not persistent. If relief is not quickly obtained, great emaciation soon follows. These, then, are the pathognomic symptoms which present themselves to our notice.

In the *treatment* of acute cases, prompt and decisive measures are necessary. I have never attempted venesection, having been fairly successful without it, but an old friend of mine says that in acute cases there is nothing to equal it; but considering that the undue excitability is only due to a poisoned state of the blood, and not to any inflammatory action, besides holding in view the

frightful depression which follows, I must confess I have never had the boldness to adopt this mode of procedure. Taking it for granted that the liver is the *fons et origo* of the mischief, we should direct all remedial agents to that organ. Some evince a little diffidence in the administration of the compounds of Mercury where the liver is in a perturbed state; but having no scruples of this kind, I give immediately Aloes ʒv., Calomel ʒij., Ginger pulv. ʒi., in a ball. As an outward application, nothing excels in merit the mustard "pack" over the region of the liver, which is applied as follows: the mustard is prepared in the ordinary way and well rubbed in, embracing a somewhat large area; this is covered with a large blanket soaked in hot water and then wrung out, over this again a dry rag covered by india-rubber sheeting is strapped, the whole being kept there for an hour if possible. The effect in most cases is almost magical, the only drawback being, that if the patient is in the excitable condition before described to start with, it, for a time, rather enhances it than otherwise, but the sequel is most patent. The pulse changes in character, and loses more or less its irregularity; the respiration approaches its normal condition, and altogether there is a species of repose, equally as gratifying to attendant as to patient. Having accomplished this object, the next is to get the bowels to respond. If the medicine does not speedily operate, I find the Magnes. Sulph. ʒij. cum Spt. Æth. Nit. ʒii., Ext. Gentian ʒii. Aqua ʒviii. every six hours, combined with occasional enemata, the best remedy. (A Turkish bath would doubtless operate in a way that would bring relief; but so far, although I have frequently pointed out the good results that would accrue from its presence in every sick lines, Government has not acceded to my request.) Once having obtained a reaction in the liver, that of the bowels follows, and the membranes begin to put on their wonted appearance. At this stage, some cases assume a state of chronicity which is somewhat perplexing. The bowels may be freely operating, the urine better in colour, less loaded with deposits, and micturated in sufficient quantities, still the membranes retain that sickly appearance; appetite capricious, some days a fair inclination to feed, at others none. Under circumstances like these, it is evident that the liver has not regained

its pristine condition. To remedy this, various expedients have been resorted to. If I am not mistaken, Dr. Stewart was the first to inaugurate the Chloride Ammonium era for torpidity of the liver. Since he first gave his experiences to the world, it has undergone an exhaustive trial. Ammonium Chloride is supposed to have a direct action on the portal circulation, which it relieves. Many medical practitioners combine it with Nitro-hydrochloric Acid Dil. and vegetable tonics; others prefer alkalies. For the lower animals I have tried both, and have a decided preference for the alkali combination. Acids, no doubt, act as a tonic, and assist gastric digestion; but as derangement in this particular is the sequel of a disordered state of the liver, I contend that our efforts should be confined mainly to the direct restoration of that important organ. The following is the formula I generally adopt, and which has proved successful:—Ammon. Chloride ʒiv., Potass Bicarb. ʒiv., Ext. Gentian ʒii., Aqua ℥viii. every six hours. For local applications, I use the Nitro-hydrochloric dil. bath over the region of the liver every few hours; after a few days a slight tenderness, followed by an eruption, is observed, when it should be discontinued for a short time. A week or ten days' treatment of the above nature often suffices to restore the action of the liver. Where the patient has become much prostrated, a course of "pick-me-ups" should be gone through. The compounds of iron naturally suggest themselves, but somehow, after liver cases, they do not seem to bring about restoration of the system in a manner one would wish, and latterly I have discarded them, giving in their place Caffeine, alternated with Ammon. Carb. Caffeine, I have practically proved, both in horses and dogs, to possess specific properties as a restorative in febrile diseases; it acts slightly on the urinary organs, and is a stimulant to the various nerve centres, and so indirectly on the liver. Its cost, unfortunately, militates against its universal adoption. I give in the morning, in the form of a ball, Ammon. Carb. ʒij, Gentian Pulv. ʒij, Ginger Pulv. ʒij; in the evening, Caffeine ʒss., Ginger Pulv. ʒii., Chiretta ʒij. I need scarcely add that good dietetic arrangements stand paramount. As nature demands green food it should be given, and for this purpose there is nothing better, if green grass is not available,

than a few pounds of lucerne or guinea grass daily; roots of various descriptions will also be relished. It must be always borne in mind, that as the system has gone through a trying ordeal, so in accordance must be the rest afforded for the repair of tissue.

This part of my subject would not be complete were I not to give the results of *post-mortem* examinations. These, happily, are not often forced upon us when remedial agents can be brought to bear in anything like reasonable time. When death does ensue, it is doubtless from direct blood-poisoning, producing an excess of those violent convulsions of nature one has only to witness to remember. On making a section of the various parts of the body, I was struck with the colour which pervaded the whole. Mucous and serous membrane, adipose and muscular tissue, all seemed to be impregnated with this greenish-yellow tint. The endocardium was covered with petechial spots, in some cases isolated, in others coalescing. The spleen, perhaps, showed the greatest signs of change owing, it may be, to its mysterious attempts to stem the tide, and put a check to the ravages of the enemy which had made its appearance. It was in itself hypertrophied and the intercellular tissue was easily broken down. The liver did not reach the dimensions the severity of the attack would lead one to suppose. It was, however, enlarged and changed in colour, but nevertheless firm. Sufficient time had not elapsed for any structural change to take place, other organs were healthy, except that they partook of the colour before described, but in a milder degree.

Why the absorption or the non-elimination of bile should in some cases produce cerebral disturbance, while in others, although the blood, judging from outward appearances is saturated with it, there is an absence of any signs which would lead us to suppose that the brain is directly implicated, does not seem to be thoroughly understood. Dr. Murchison, speaking of Jaundice, says, "Under normal conditions the whole of the bile that is absorbed is at once transformed, so that neither bile-acids nor bile-pigments can be discovered in the blood or urine, and there is no Jaundice. But in certain morbid states the absorbed bile does not undergo the normal metamorphosis; it circulates in the

blood and stains the other tissues." That the urinary secretion is regulated in colour, density, etc., by functional or structural derangement of the liver, is a well-known fact. If the theory is true, that blood pigment is converted into bile pigment, and that of the bile into urinary pigment, and if we go a step farther and believe that the red corpuscles of the blood are disintegrated in their passage through the liver, and that the colouring matter of the urine is regulated in amount by these forces, we may fairly assume that the greater disturbance in this particular, the more evidence shall we have in the urinary secretion. Whether the pathognomic state of the membranes is due to the non-elimination of bile from the blood, or to its absorption after elimination, is a question open to discussion. My opinion is, if we take it for granted that if the greenish-yellow colour so characteristic in these cases, is allied to *Biliverdin*, it must be that the bile has been eliminated and re-taken up ; for it is now understood that Biliverdin is formed from the blood or blood pigment in its passage through the hepatic cells. It may be, that after the cause of this disease has come into operation, the function of the liver is not arrested, but enhanced in proportion to the elements in existence necessary for the production of this morbid change ; and having no receptacle in the way of gall-bladder for any superabundance of bile, the surplus is thus absorbed and taken up by the blood, and not being transformed as in ordinary cases, but rather decomposed, and thus giving rise to a train of symptoms described in the severer forms of the disease. The only objection to this theory lies in the fact that great torpidity of the bowels is often present, which, presuming we had a preponderance of bile, some of it would naturally find its way into the intestines, thereby increasing the peristaltic action, and bring about an opposite state to that of torpidity.

I will now pass on to the consideration of another form of liver complication, which may be designated as "*Functional Derangement*," as evidenced in *Bilio-Catarrhal Fever*. In order to make myself thoroughly understood, it is advisable that I should here briefly allude to some of the functions of this important organ—the liver. The secretion of bile, although very essential in itself, is only one of the many duties the liver is called upon to perform.

Amongst others, I may state, is the one of building and storing up that peculiar protoplasm allied to dextrine, and called *Glycogen*. We are assured that this glycogenic function is one of the most important. In it we have a reserve from which is drawn two elements necessary to support the body—*i.e.*, sugar and fat. This formative process of supplying a substance easily disintegrated by the albuminoid ferments which the liver brings into play, is one of paramount importance. For you will quite understand that anything which interferes with this necessary change, tends to disturb the harmonious balance essential to the animal economy. Nature, however, is all-powerful, and it is only when she has become overburdened that we are enabled to take cognisance of the results. Another important duty of the liver, is that peculiar power of breaking up over-fibrinated blood, and the destruction, in a measure, of the red corpuscles. If such is the case, we cannot wonder that this organ is often on the verge of passing from a physiological to a pathological condition. These, then, are some of the duties which the liver is continually engaged in. We will now consider the causes in operation likely to produce an altered state of these functions. Horses, unlike most men, undergo a certain regimen in diet. As a rule, they are not allowed to indulge in any of those erratic departures from a well-established system, which is too often the case in the higher order of animal mechanism. Most practitioners in this country are conversant with the causes and symptoms as pourtrayed in the pathological condition known as *Bilio-Catarrhal Fever*. We know that this disease in its inception appears to be generated by a species of contagium, assuming in some cases a somewhat mild type; in others, a severer form. I do not purpose treating of Bilio-Catarrhal Fever as a separate disease, but I shall only allude to it in connection with our subject of Functional Derangement of the Liver. In following the course of any epizooty as affecting the equine tribe, we do not find that the symptoms in every case are by any means analogous, but vary in proportion to the severity of attack. We, nevertheless, are able to classify certain signs which may be formulated as a guide to correct diagnosis. Catarrhal Fever, with its concomitant symptoms, having established itself, in what relation, and how does the liver participate

in the attack? Various theories may be promulgated as to the *modus operandi* in which this organ becomes temporarily deranged. I have heard it stated that it is simply an extension, as it were, of the form of Catarrh to the bile ducts, following as a natural sequence the ordinary workings of Nature. However tenable this theory may appear at first sight, it will not bear investigation; for if such were the case, the simple forms of Catarrh would produce, in many instances, similar results; *ergo*, we must look elsewhere for a true solution to the problem. This I am inclined to believe may be arrived at from the knowledge we possess, that this form of Catarrhal Fever is, if I may so call it, a special disease, having doubtless for its production a well-arranged but unknown code of causes. If we look upon this affection as something more than that produced by local factors, we can at once understand why the liver participates in the attack. Bearing in mind that this organ acts as a great blood purifier, it requires no great stretch of imagination to understand that its functional derangement is brought about by an empoisoned state of the blood. As evidence of this, we know that in tropical climates, where attacks of Malarial Fever in human subjects are prevalent, the liver soon displays evidence of disease. This I look upon as the cause of functional derangement of the liver, accompanied by that special or contagious form of Catarrhal Fever. It is interesting to study what this disordered state amounts to. If the same animal had frequent attacks, we might reasonably conjecture that disorganization of all structure had taken place; but we do not find that horses habitually suffer from this form of Fever. We can then only look to a much simpler morbid condition in order to explain this altered function. Considering the somewhat mysterious workings of the liver, we might indulge in a dozen fantastic theories; but as far as I can see, it resolves itself into merely one of venous congestion, which is set up by an undue amount of morbific matter in the blood. I am led to this conclusion, that with judicious treatment, aiming solely to get rid of congestion, relief is speedily afforded. The *symptoms* generally are well known to you, so need no description. The *treatment* must be regulated by the nature of attack, but what are called liver stimulants should be administered. It is erroneous to

imagine that the various agents we employ have a direct action on the liver; such is not the case, for they indirectly only expedite hepatic secretion and thereby relieve congestion. This question need not very much exercise our minds, so long as we obtain the desired end. Owing to the liability of Catarrh to extend itself to the various mucous membranes, purgatives in all cases are inadmissible. Were we treating a simple case of Congestion of the Liver, our measures would be framed accordingly. But having a set of symptoms really requiring antagonistic remedies, we are compelled to exercise extreme caution. Under all circumstances, however, there can be no objection to the administration of small dozes of Calomel, *e.g.:* A scruple morning and evening combined with vegetable tonics, providing it is not persevered with too long. If any aperient is necessary, small dozes of Magnes. Sulph. cum Spt. Æth. Nit., combined with enemata, may be advantageously employed. Occasionally the catarrhal symptoms disappear, but still the liver is sluggish. In these cases I should certainly administer Ammon. Chloride and alkalies, as suggested in Bilious Fever. A draught morning and evening, with a ball at mid-day, composed of Quinine Sulphate ʒi, or Caffeine ʒss., Chiretta ʒii. Ginger Pulv., ʒii. would meetwith success. Chiretta is supposed by some to assist hepatic secretion; whether this is true I know not, but at any rate it is a valuable tonic. It is not often necessary to adopt any local remedy; if such is expedient a mustard pack, or the Nitro-hydrochloric Acid Dil. bath should be had recourse to. As a rule, good hospital management tends soon to establish convalescence. I wish to draw your attention to another form of liver derangement, viz., Iodiopathic Congestion. This is often met with as a disease *sui generis*, being separate and distinct from that form of congestion seen in the diseases before described. The effects are observable in two classes of horses, *i.e.*, in plethoric animals on the one hand and in debilitated ones on the other. The high state of domesticity which some horses are apparently subjected to, is not always conducive to keeping the motive springs of health in that condition necessary to withstand the attacks of functional derangement of any organ. Hence we have in overfed and underworked animals a disposition to liver disease,

not apparent in those which undergo a fair amount of exertion, with only sufficient food to meet the requirements of tissue change. These attacks are often insidious in their nature and behaviour, and require a somewhat large experience to correctly diagnose the changes which have taken place. In all liver diseases in horses, we meet with insuperable difficulties not in force in the human subject. In the latter case, the degree of hepatic dulness can be ascertained to a nicety. The oppression or fulness in the right hypochondriam is fully described. The integument being generally devoid of hair, is often an index as to liver derangement. The lower animals, on the contrary, do not indulge in articulate expression, as conveyed in words, consequently cannot describe the fulness here, or the tenderness there. Percussion does not give the same satisfactory results. The colour of the skin militates against our using it as a medium by which we can arrive at, with other appearances, definite conclusions. We, nevertheless, have prominent symptoms which afford us valuable aid. The mucous membranes, especially the conjunctival and buccal, are, perhaps, the first to register the attack, and give us evidence of hepatic derangement, be it functional or organic. The kidneys, owing to their co-operation with the liver in the metamorphosis of tissue, display by altered secretion their affinity for morbid biliary products. The urine in the lower animals is, in my opinion, not sufficiently studied, or we should oftener find that certain diseases, which present no prominent features, would be more easily understood. In this disease its colour and density are often altered; so much so, that its varying conditions enable us to arrange our thoughts in proper sequence as to the duration of attack. Were it not so, functional change and disorganization would be a sealed book to us. If I may be allowed to digress, I would remark, that in testing the density, colour, etc., of horses' urine, care should be taken that the conditions of each operation are the same, otherwise an erroneous conclusion may be arrived at. Before I specially gave my attention to liver diseases, I examined the urine of every horse in my late regiment before and after watering order, and a considerable variation was discovered. The surrounding temperature, as also that of the urine itself, should be taken into

consideration, as deviations in this particular may alter the buoyancy of the fluid. These details may not appear to be very forcible, but are absolute where correct observations are to be recorded. A register of the urine should in all cases be kept, with respect to its density, colour, and reaction; and annotations should be made of the changes which occur from day to day. In the case of plethoric animals, this disease—Idiopathic Congestion—is induced by an overplus of nitrogenous and carbonaceous materials introduced into the system. A great portion is doubtless voided as excrement, but the remainder must, in the ordinary course of nature, be taken up into the blood and disintegrated in its passage through the liver. This organ, we are aware, varies not only in dimensions, but also in its capabilities of sustaining the work thrown upon it; or in other words, some livers can perform more work than others of the same size. When an undue amount of crude material is thus pressed forward in order that the liver may exercise its function, we find that it is unequal to the task, and thus becomes temporarily deranged. Its auxiliaries, the kidneys, come to the rescue, and as a sequel we have demonstrative proof that, in some cases, the destructive process has not been carried out in accordance with the laws of nature. The abnormal products often formed are albumen, and a preponderance of urinary deposits—urea and uric acid, which do not form so characteristic a feature in equine as in human urine—have become associated with this change. The quantity of the secretion is somewhat decreased, and its colour is heightened, owing to the presence of pigment in abnormal proportions. Torpidity of the bowels is also present in many instances, the fæces possessing the ordinary features resulting from hepatic derangement. The mucous membranes are a pale yellow in colour, and do not possess that fresh hue which denotes health and vigour. What are called constitutional symptoms are not always present. The pulse is rarely a guide; although it may be quickened, it possesses little or no indication of severe suffering. The tongue is furred, and covered with ropy saliva. The lining membrane of the mouth, fauces, etc., is in some cases reddened, and approaches pustular eruption. But this is not a frequent symptom; when it does

exist, it bears evidence of gastric derangement. Percussion avails us little; pain is not by any means common; the appetite is capricious, preference being given to green fodder, and a consequent loathing of corn. Lameness in the off fore-leg is sometimes present, but out of the many cases I have witnessed this symptom has only twice been observed. The animal is generally dull and listless. These signs will, as a rule, prove sufficient, if carefully observed, to diagnose this form of liver complication. Very nearly the same conditions are distinguished in debilitated horses, when the debility is consequent on the chronic state of congestion, whereby assimilation is impeded. So what, *in initio*, might have affected plethoric animals may, by its continuance, render them astheniated. The *treatment* is similar to that adopted in the cases before enumerated, but often requires perseverance to overcome this habitual congestion which seems inherent in some animals.

There are other forms of liver disease which I should have wished to have noticed, but time will not admit of my doing so.

CATALEPSY IN THE HORSE.

BY M. J. TREACY, M.R.C.V.S., INDIANAPOLIS, U.S.A.

THE records of veterinary literature, as far as I can ascertain, do not mention anything of the above; hence the following interesting case is worthy of being noted.

A few weeks since, a handsome bay gelding, five years old, was sent to my hospital with the following history: Had been purchased a short time, frequently shown symptoms of staggers, and on that morning whilst working had suddenly stood perfectly rigid and still, and seemed powerless. His pulse was sluggish, full, and numbered 30; temperature, 101·3°; the prehensile powers of his lips were very weak; he took half an hour to drink one quart of water. Diagnosis: brain trouble. Treatment: An eight-dram aloetic pill and one ounce of Potass. bromide three times daily, with plenty of cold water within reach, and soft food. He continued dull and mopish for four days (bowels responding actively to the pill), with his head pressed against

the stall continually. I then suggested setoning and blistering his head, to which his owner would not consent, and at his request I had him slowly exercised in our presence. In a few minutes he carried his head upwards and stepped as if he were blind, and suddenly stood still and rigid as if shot, with the near fore limb pointing forward. I pulled his head to his shoulder, and there it remained. I pulled his ears down, and they remained so—in fact, any of his limbs would remain in the position they were placed. This condition continued for about twenty minutes, when he was led to his stall, where he slowly recovered his senses. Unfortunately, he was removed and sold to a farmer, so that I could not trace this very interesting case further.

ANTHRAX FEVER, OR LOODIANAH DISEASE, IN INDIA.

BY J. MILLS, M.R.C.V.S., A.V.D., INDIA.

(*Continued from page 22, vol. xii.*)

Prevention.—Before going into the subject of prevention, I will give a brief outline of what was done at Bareilly.

On my arrival at the station, on the 8th October, 1877, I found the horses picketed in dangerous proximity to their stables; therefore, knowing that the first thing to be done was the speedy removal of those not yet affected to a position where plenty of fresh air could be procured, I at once suggested their being taken to a "tope"* at some considerable distance from their lines, and which was elevated, and apparently healthy, and well exposed to the prevailing winds. My suggestion was carried out on the following day (the 9th). One case occurred the next day after their arrival at the tope, but it was of a very mild type. Here the disease was checked, as no more outbreaks took place.

The floors of the stables were lifted to a depth of one foot, and relaid with fresh earth and kunkur.†

* A clump of trees.

† Kunkur is regarded as a deposit of the Drift period, is of a light-brown, reddish, or ash-grey colour, and rarely fossiliferous. Its usual composition is —Carbonate of lime, 70 parts; silica, 13 parts; alumina, 17 parts It is principally used in making roads and forming an impermeable flooring for houses and stables.

The mangers were entirely removed, and the head-rope pegs taken up and replaced by new ones. The walls of the stables and all the other buildings in the lines were whitewashed.

The manure-heap was removed, and the manure carried to a farm at a considerable distance from the lines, and the soil on which it stood was dug up to a depth of four feet, and fresh earth substituted for that removed. The grass-cutters' ponies were shifted to another standing, at some distance from the stables. No trees were cut down, but all the long branches were lopped off.

A committee was formed, which recommended that the centre division stable be pulled down and a new one built on a portion of ground on the other side of the road, so as to allow of more room. They also recommended that proper drains be laid. The stable was not pulled down, nor a new one built. Brick drains were laid, but were of no use whatever, from the flatness of the site.

The remarks which I am about to make regarding the prevention of Loodianah Fever may not only be considered applicable to that disease only, but many of my suggestions may with advantage be employed in the prevention of disease in general.

It is not, however, my intention here to present a long dissertation on the preservation of health by means of a proper diet or a proper system of sanitation, or to lay down laws as regards exercise, etc., etc., as that subject has been fully gone into in Mr. R. Poyser's able essay on "Stable Management in India," and which I would recommend every one to peruse who desires further information on the subject. But having gone into the causes producing this disease, I must be pardoned if I touch slightly on stable management in general, as I find its proper application so potent a factor in the prevention of this malady.

What is required is a careful and judicious administration of the means at our disposal for the wants and comforts, as well as the health of the animals under our care. This will effect a great deal, not only in preventing the occurrence of disease, but also its diffusion when it has broken out, as well as in removing many of the causes supposed to engender it.

It is our duty to frame "health laws" and to see them rigidly enforced. The antiseptic regimen and conditions are the best

preventives of this disease—in fact, whatever is most conducive to health should be observed.

My remarks, firstly, will be confined to what, in my opinion, ought to be done to prevent an outbreak taking place; and, secondly, what to do to prevent its diffusion when it has broken out.

Locality.—The choice of a proper site, in a good healthy locality, on which to erect stables, is of paramount importance. A situation, therefore, ought to be chosen which is as high and dry as possible, and where the air has free access. And let us bear in mind that it is an universal principle that all animals will thrive much better in open, high, dry, and extensive surroundings, than when they are confined in a small space, although it may not even amount to overcrowding; on a portion of damp, undrained land, however well they may be fed and cared for, they will become diseased. In our selection we must not only provide for the present, but for the prospective wants of the situation, to secure the essential objects of ventilation, drainage, etc., and in that way its consequent salubrity, and also to choose such a place that we can provide any additional improvement that may become necessary from time to time.

Prior to building it would seem to me to be most essential to make a full and searching inquiry as to what use the ground had been put to, and, further, to ascertain if there are any objectionable surroundings.

In conclusion, particularly avoid a situation which has the character of being malarious, as the septic and putrescent tendencies are more strongly developed there than in elevated positions, and are consequently most undesirable.

Stable-buildings.—My experience of India convinces me that stable architecture may be made to contribute much more to the health of the horses that become their inmates than they at present do. Their construction in many instances is defective, in not giving sufficient cubic space, and in being built too closely together. Of late years, however, great improvement has taken place in the building of stables, but extensive as that has been, still they are yet anything but what they ought to be.

In time properly constructed stables would pay for their erection by the benefit that would accrue from their use.

I certainly think that the massive brick erections at present in use are quite unnecessary, as horses in India only require protection from the rays of the sun, and nothing more, the cold never being so intense that it cannot be combated by warm clothing. Therefore all that is required is simply a kind of open shed, with a thoroughly sun-proof roof; and I would say that everything which interfered with the free circulation of air should be swept down with the "besom of destruction."

The brick walls and uprights ought to be replaced by iron pillars sufficiently strong to uphold the roof.

The advantage of iron, in a sanitary point of view, in the construction of a stable is at once apparent. It is non-absorbent, and when coated with tar or paint can be washed clean when occasion arises; and being a strong, compact body, it is capable of greater strength in a given space than bricks. Consequently, these immense air-obstructing uprights can be dispensed with, and replaced by a light column of iron.

Of course, I am well aware that the primary cost of iron would be considerably in excess of brick, but the former would not require the constant repair of the latter, and would last much longer. Then, again, look at the benefit to health that would take place, and in that way there would be an ultimate saving to the Government.

I will now consider what kind of a roof ought to be employed.

Thatch is a capital non-conductor of heat, and would make an admirably cool roof, were it not that it becomes saturated with wet, rots and decays, and gives out malaria just as any other decaying vegetable matter would. It also becomes the habitation of rats and other animals, which in time render it foul.

Tile roofs are the most common in use, but they become very hot, and do not cool down sufficiently quick.

What I feel inclined to think would form a good cool roof would be one composed of teak or some other compact wood, two inches thick, covered with felt, and over which, with a space of eighteen inches between, have corrugated galvanized iron, so as to form, as it were, a double roof. This intervening space will be found to act most beneficially. There should also be a

ridge ventilator, constructed for the purpose of giving exit to the foul air of the stable.

The roof ought to be made wide enough to form a verandah. Many will, very likely, say how hot the iron is liable to become; but then, again, on the other hand, how rapidly it cools; and if it were to become excessively hot it would never affect the horses in the stable, as the vacuum between the iron and wood prevents anything of the kind happening.

We come now to the most important consideration of all, viz., the foundation and flooring. A foundation, to be good, must not only be sufficiently strong to bear the superstructure, and of sufficient depth to cut off all connection with the surrounding soil, but it must also be constructed of materials calculated to resist moisture. The best materials for this purpose are concrete and sound bricks partially vitrified in the kiln. If such bricks be well laid with mortar composed of sharp sand, containing no vegetable substances, and the concrete be free from earthy particles, well mixed, and firmly thrown down together, the admission of damp will be entirely avoided, and this is one of our main objects; as without a dry foundation a stable can never be healthy. Stone, chalk, bricks which have not been properly burnt, and impure mortar have all a tendency to absorb moisture, which, if once received by such materials, ascends, or "creeps up," as it is technically called by builders, and thus affects the whole building.

The foundation and flooring of the stable, with the outside standings, ought to be raised at least two or three feet from the ground, to serve the twofold purpose of a rapid outflow for the drainage, and to prevent inundation during the rains. As to the flooring, if expense was no object, I should feel inclined to have the stable laid throughout with "terra-metallic clinkers," as they possess the advantage of being cleanly and durable, and if properly laid on a concrete bed of quicklime and gravel, are perfectly impervious to moisture or urine, which is just what is required. I calculate that these floors laid with clinkers would cost about £5 5s. each stall: thus—cost of clinkers at home, per thousand, 35s.; carriage out to India, and laying, say, 35s. more; and it would take about 1,500 of them, measuring 6 in. by $1\frac{3}{4}$ in. to floor each stall.

This may seem very expensive indeed, but the loss by the two outbreaks at Bareilly, in 1877 and 1878, would just have paid for ninety-two stalls being laid with clinkers at £5 5s. each stall. However, not having yet arrived at the age of "clinker maturity," we must be content with the articles at our disposal for floor-making, viz., kunkur, lime, broken bricks, charcoal, and sharp sand, formed into a kind of concrete, and well rammed down into a compact mass, with a fall of half an inch to the foot for drainage purposes. Unless these floors are thoroughly rammed down, and allowed to stand for a considerable time to harden before the horses are put into the stables, the result will be unsatisfactory, as, from the great moving weight of the horses, if put in too soon, the floors will soon become a mass of holes, forming nothing more or less than small cesspools.

Drains.—Drainage, to be effective, must serve two purposes—firstly, to carry off fluid impurities; and, secondly, to secure the stables and their surroundings from inundation during the rains.

Good drainage in some instances is very difficult to procure, but of course it entirely depends on the site; where a sufficient fall can be obtained to secure the desired rapidity of outflow, I should recommend that a "pucca" drain be laid, 3 ft. wide, running with a rapid slope between the inside and outside horse-stands; and also that the outflow of each of these drains be secured by a continuation of drainage, leading to the main line of surface drains. But however flat the site, an endeavour ought always to be made to construct a system of drainage to carry off the liquid refuse of the stable, and to prevent the lodgment of rain-water.

All drains should be carefully bricked and cemented, lest the foul water they contain should ooze through and pollute the soil below.

In form the drains ought to be saucer-shaped, smooth, and beyond all, avoid many joints in them, as they are so liable to become choked with the *débris* of the stable.

And, lastly, the drainage of collected water, wherever it may be, either near to or at a distance from the stables, must be carried out to ensure atmospheric salubrity. You may, however,

drain the surroundings as much as you like, but unless the stable itself is healthy, any amount of external precautions will be of no avail whatever in averting the cause. There must be a combination of preventive measures planned, so that the one will scientifically and practically harmonise with the other.

Ventilation.—We are well aware that a sufficient and well-regulated supply of pure air is one of the most essential conditions for the maintenance of health, as without it we lay the system open to the attacks of every disease horseflesh is heir to.

To prevent the foul air of one stable from reaching to the one next it, and to ensure free ventilation, they ought to be built in *echelon ;* but I am sorry to say that in many instances in India this simple precaution has not been adopted.

The long ridge ventilator is the best for the roof, and ought to be made very wide, so as to give ready exit to the ascending air.

In ventilating a building we must not only try to get rid of the impure atmosphere it contains, but we must also endeavour to introduce pure air into it ; and I can only lay down one rule regarding fresh air, and that is, wherever it is to be found *utilise it.* It cannot be too strongly impressed on the minds of those connected with horses in India, that to try to purify the atmosphere of the stable is to seek health for the animals under their care.

At certain seasons of the year it is an utter impossibility to obtain any ventilation whatever, as the elements, one would think, were at a standstill. Therefore, during the seasons when this takes place, viz., about the end of the hot weather, and during the rains, the only thing to be done is to picket the horses out as much as possible.

Cubic Space.—To avoid overcrowding, the stables must give ample cubic space. Strange to say, on comparing the cubic space allowed to the troop-horses at home, and to those at Bareilly (and the stables at that station may be taken as typical of those found in most parts of India), I find that there is only the difference of a few feet. Thus, cubic space at home per horse is 1,605 ft., and at Bareilly 1,614$\frac{2}{3}$ ft. ; or just 9$\frac{2}{3}$ ft. more than that allowed in the English troop-stable. Therefore, from the above comparison, I hold there is room for improvement.

I should say that in India the cubic space allowed per horse ought to be at least half as much again as it is at home, or not less than about 2,400 ft., as in a smaller space it is an utter impossibility to keep the air of the stable pure.

Mangers.—The construction of mangers ought not to be allowed, as from the porous mud they are composed of they very soon become foul, and in that way engender disease; and, further, they are quite unnecessary while nose-bags are in use.

Sanitation.—The general sanitation of the stable and its surroundings, must be carefully observed and secured by proper supervision. The floors, outside standings, and drains should be swept out twice a day and all refuse removed.

As regards the collection of urine, when a horse is micturating, if the syce is in the stable he ought to collect the urine by means of a small chatti* held under the horse. This urine ought then to be transferred to a larger vessel, and conveyed two or three times daily to the manure heap.

If it be not practicable for the chatties to be used, the next best thing is the dry-earth system. There ought to be a little clean earth always handy behind each horse, and when he urinates sufficient ought to be thrown on it to absorb it. This earth, now saturated with the urine, must be scraped up and deposited with the dung, as if left it only becomes trodden down into the floor, and in that way pollutes it.

The droppings should be collected as soon as they have fallen, and put into baskets to be carried to the manure heap.

As regards the position of the manure heap, I decidedly consider it should be at least 1,000 yds. from the stables or lines, and placed in such a position that the prevailing winds will waft the effluvia it gives off in an opposite direction from that of the lines; and the manure ought to be sold to some of the neighbouring ryots,† so as to ensure its frequent removal, as it is most injurious to allow it to accumulate; and providing it cannot be sold, the best plan is to burn it as soon as it becomes dry enough.

* An earthenware basin or vessel.
† A farmer, tiller of the soil.

(*To be continued.*)

MELANOSIS.

BY RICHARD W. BURKE, M.R.C.V.S., A.V.D., LIMERICK, IRELAND.

THERE are many who look upon Melanosis as not having any direct connection with Cancer, and the reason for this is obvious and easily explained. It is simply this, that viewing a disease from varied standpoints, as different men do, the majority of all such as assert that it is not of a cancerous nature look at it from an abstract clinical point of view; and this fact is an admission that the pathology of that disease receives but scant attention at their hands, inasmuch as "clinical" men hope to arrive at a correct knowledge of the pathology of disease by a study of its symptomatology only. Until recently, as we are aware, the veterinary profession, as well as the medical faculty generally, were accustomed to arrive at their results through a similar process. The subject of pathological anatomy has, however, lately ripened, and the better pathologists have brought themselves to place a greater reliance upon its teachings than on those of symptomatology. The point of view, moreover, of the clinical observer is that merely of a specialist, and we are all conscious, no doubt, of how impossible it is for a specialist to attempt to dictate to a profession; and further, we venture to think that his success, did he succeed, would be a short-lived one. Any one-sided knowledge unquestionably has its dangers; and it is a question if, at its best, it is better than no knowledge—at any rate, it should not be suffered to represent merely convenient opinions concerning the solution of questions of wide significance as a cloak to cover the knowledge of nothing, while those who continue to pose in their exclusive clinical victory must remain unfettered by any control of science. The surmise of the clinical observer, then, and one who assumes the *rôle* of an expert specialist, is restricted to the narrow limits of the *physical characteristics* of the disease itself. His objection is that Melanosis is too modified in its form for Cancer; that an animal may be covered with melanotic tumours, and may yet exist for a long period. Lænnec, who was one of the first exponents of this disease and its results in man, has already observed that the melanotic symptoms are very obscure; that the disease is unaccompanied

by fever, and exhibits little or no emaciation until the later stages; that it is in many cases not capable of detection during life; that when detected it scarcely ever suggests indications for treatment; and that it is a disorder more pronounced in old rather than in young age. Now, this is exactly what the clinical observer of the equine patient signally maintains. We are all agreed that it is the more pronounced in old age, and that it rarely undergoes a process of softening and expulsion until it has existed for a lengthened period of time. As I have observed, since the inception and development of the subject of morbid pathology, its exponents have given to *post-mortem* appearances of disease a greater importance than heretofore; and it has been conclusively shown that Melanosis, whether occurring in horse or man, is liable to systemic invasion—that is, it slowly but surely produces similar tumours in internal organs and remote parts. And this malignant tendency of the disease allies it in its nature and kinship to Cancer. It was the general opinion of even the earliest observers in our own profession, that external Melanosis was liable to secondary internal lesions in the various viscera of the animal; and we find Professor Dick writing upon this point in the *Lancet* so far back as some thirty years or more ago, where he assumes the *rôle* of an anatomo-pathologist in making this clear.

We have still another proof of the cancerous nature of Melanosis, in the fact that so long as the tumours are left to themselves they remain in a quiescent condition, but that as soon as any irritation be applied, whether surgical or otherwise, they re-assert their activity. Histologically, too, we find that Melanosis, equine or human, presents all the characteristics of Cancer. Mr. Meyrick, who recently adverted to the subject of this disease in his paper on the "Soundness and Unsoundness of Horses" has defined it to be "simply a collection of the dark pigment cells that are usually confined to the skin, iris, and the more externally situated parts of the mucous membranes." Now, I contend that the disease is something more than a mere collection of pigment cells. It is an absolute outgrowth of pre-existing normal tissue, which to the pathologist is something very different to a mere collection of pigment cells; and for the reason that

the one is hypertrophy, the other infiltration, the former always preceding the latter. Further, that which is hypertrophy is hypertrophy of normal pre-existing tissue—both interstitial and adjunctive constitute a distinctly new product, new developments of the part, or a true zenogenesis (the generation of something foreign), and corresponding to some distinct purpose. There obtains in melanoid tissue "pigment cells" and an abundant *stroma* withal. Surely, then, it does not savour of temerity to assert that Mr. Meyrick's definition of Melanosis is conspicuously deficient in accuracy of exposition, from the point of view of its histology; and as such we must regard it—for while it takes cognisance of the former, it leaves wholly out of consideration the questions which surround a plausible explanation of the latter.

It has been said that melanotic tumours in the horse never, or at any rate very rarely, ulcerate. This is not, or ought not to be, matter for surprise, for we are aware that all cancer-structure, unless richly cellular in its constitution, seldom or never ulcerates, until and unless irritation be brought to bear on it. We must bear in mind the fact that melanotic tumours consist for the most part of fibrous tissue, and not wholly of the "pigment cells," about which all may satisfy themselves who choose to do so by microscopic examination. Of course, no two cases are identical, and so we find that in certain instances we have melanotic tumours that are very prone to ulcerate, even when of a not long existence; while its general reluctance to present an early tendency to ulceration, by inducing any irritative changes in surrounding structures, marks its further analogy to Cancer, which spreads, as has been maintained by some of our best authorities in this country and on the Continent, by a process of conversion, and not by inflammatory degeneration.

Considering the possible malignant characteristics, then, of the disease, I should consider, contrary to the views of some authorities, that an animal in this condition would be rightly pronounced to be legally unsound, knowing its liability to internal invasion at some remote period or otherwise.

There are some practitioners who contend that lymphatic contamination implies an all-important characteristic of Cancer, and that an absence of this in Melanosis denotes absence of proof

of the relationship that subsists between the "two diseases." This is a mistake, however, which it is important should be dispelled. The estimate of Sir James Paget,* Van der Kolk,† Professor Benedict,‡ and others, is a sufficient argument against the propagation of the disease by absorption effected through the lymphatic system, for although it may occasionally be so conveyed by the lymphatic ducts in their usual functional way, this is not necessarily its means of conveyance; if it were so, we should expect to find the neighbouring lymphatic glands contaminated with cancerous particles in the course of a few days at most, if not earlier, certainly in a very early stage of the disease. Bastian§ says: "Neighbouring lymphatic glands become affected in the case of tubercle and cancer growths, just as they do where simple inflammations exist, and just as the change in the gland in the case of inflammation must be regarded as the result of a mere induced morbid action, rather than as the product of a multiplicative reproduction of a transmitted germ, so is a similar explanation open in the case of cancer and tubercle." While another authority‖ concludes: "An absorption of cancer cells by means of the lymphatics cannot, indeed, in itself be ranked amongst impossibilities; but, at all events, this much is certain, that no propagation of the disease can take place until the lymphatic glands have in their turn undergone a complete cancerous transformation, and similar masses of cancer push on their growth from them into their efferent vessels."

But returning to the strictly practical side of the question, we have abundant confirmatory evidence on this point furnished for our information by Professor Benedict, of the Breslau University, who has collected the statistics of some few thousand cases treated during a course of fifteen years, and which prove in an unerring manner the truth of our contention. Comment is, therefore, unnecessary in this connection.

One opinion has been expressed concerning the nature of Melanosis, to which I cannot give my countenance. Tradition affirms that grey horses are more liable to the occurrence of the malady than those of any other colour; and we are all aware of

* Lectures on Surgical Pathology. † *British and Foreign Medical Review.*
‡ *Lancet.* § *British Medical Journal.* ‖ Virchow.

the difficulty that is invariably experienced in rooting out these old superstitions. Nevertheless, it must always be done, in and out of season, and wherever we may chance to meet with them. One of the reasons why this superstition has been perpetrated and perpetuated, is that Melanosis is more easily seen in a grey horse than one of a darker colour; while another is that it has led persons to constantly examine those animals of the favoured colour in preference to others; and this has naturally and necessarily led to statistical errors. So far as my own experience extends, I may confidently assert that it is as often to be met with in dark as in grey or light horses and cattle.

In concluding my remarks, I venture to express the hope that, after the evidences I have here adduced, clinical men cannot blind themselves to the fact that the importance of the disease lies only in a study of the physical conditions of it, while all other relations of pathology are suffered to occupy subordinate positions, which by necessity must take a foremost place in any consideration of the subject that is to have a permanent or at all lasting foothold. I, for my part, must decline to accept any compromise in the necessity that is now urged for taking an at once collective view of the subject-matter under consideration, as in it we have to discover the nature of a disease that is of the first magnitude to the public in general and ourselves in particular.

Editorial.

THE DURATION OF PROTECTION AFFORDED BY INOCULATION IN CONTAGIOUS DISEASES.

Though inoculation for the artificial production of certain contagious diseases of man and beast has been practised for more than a century, yet the recent advances in histology and experimental pathology have placed the subject in an entirely new light, and demonstrated that with two or three, if not with all of these maladies, protection may be afforded against them by inducing them in an extremely modified form, through inoculation with their cultivated virus. This has been done with such fatal diseases as Anthrax, Symptomatic Anthrax, Fowl-Cholera, and to a certain extent with Rabies, and it is within the range of possibility that all the other scourges which owe their development and extension to microscopic germs will soon be included in the list. But among the other problems which remain for solution in this matter of protective inoculation, is that of the durability or persistency of the

immunity or protection so afforded, and its being absolute or incomplete.

It has long been well known that certain of these maladies of mankind and animals, rarely, if ever, recur in those which survive their attack, while others (though they are few in number) may again be developed after a variable interval of time. In the case of animals this interval, or even the completeness of protection, is not well ascertained, they being usually short-lived, and with some diseases we are not at all certain whether immunity may be conferred by one attack; indeed, until quite recently we did not know that the three first-named disorders just mentioned came within this category. The Anthrax of cattle and sheep, it has been conclusively demonstrated, can be protected against in its most virulent form, by inoculation with modified virus, *i.e.*, the artificially cultivated germs of the disease; but the question has arisen as to the duration of this protection, as, until laboratory experiments revealed the fact, it was not known that this was a non-recurrent disease. Sufficient time has not yet elapsed since the introduction of this protective inoculation to give a definite answer to the question, but already materials are being collected to afford a satisfactory reply, and perhaps the most important contribution is that afforded by our esteemed colleague, M. Rossignol, of Melun, who has already rendered such good service in this direction, and especially in the experiments undertaken on his own farm, as detailed in this Journal for last March. These experiments, as well as those performed more than a year ago, were so startling and apparently decisive in their results, that in less than three months more than fifty thousand sheep belonging to the farmers of Brie had been submitted to protective inoculation against this scourge—so destructive in this part of France. Last June it was decided to institute a new series of experiments on M. Rossignol's farm, with the view of not only testing the durability of the immunity or protection so conferred, but also ascertaining whether and to what extent the ground in which animals dead of Anthrax were buried was noxious to sheep and cattle grazing upon it. The last portion of the experiment has not yet been reported upon, but the first has, and is very satisfactory. A number of sheep which had been inoculated a year ago, and had subsequently successfully undergone the severe test of inoculation with most active virus, were again submitted to this test, along with others which had not been so protected. The result was, that while all the unprotected sheep perished in a very short time, eighty per cent. of those inoculated were unharmed. Taking all things into consideration, this result must be accepted as not only demonstrating that the immunity conferred holds good for at least a year, but also that it is practically complete with regard to all the animals inoculated; for it must be remembered that the test was a most severe one, and the number of animals comparatively small. In South Africa a horse which has survived an attack of the dreaded "Horse-sickness"—an anthracoid disease—is highly valued, in consequence of its diminished tendency or total insusceptibility to further attacks. Until Rossignol's conclusive experiments, this was the only evidence we possessed as to the non-recurrence of Anthrax.

Another valuable contribution is furnished by Professors Arloing,

Cornevin, and Thomas, of the Lyons Veterinary School, with regard to that form of bovine Anthrax they have designated as "Symptomatic," and which is commonly known in this country as "Black-quarter" (*Carbuncular Erysipelas*). As we have shown from time to time, these investigators have not only demonstrated this disease to be different from ordinary Anthrax, and due to another kind of Bacillus, but they have also proved that protection against it is afforded by the intravenous injection of its virus. Their more recent experiments have been undertaken to settle the point as to the persistence of the effects of this inoculation, and also on the transmission of the conferred immunity from the cow to its progeny.

So long ago as last October, they had published the results of experiments made on thirteen animals which had been inoculated the previous February—experiments which proved that immunity was present eight months after inoculation. In a note recently presented to the Académie des Sciences, they report that immunity yet persisted after eighteen months. A heifer protectively inoculated on November 30, 1880, was inoculated on April 21, 1882, with a certain quantity of virulent pulp inserted into the crural muscles, and which was capable of inducing a fatal termination in an uninoculated animal if it received only one-tenth part of the dose.

This heifer never exhibited the least disturbance in health; while a guinea-pig which was inoculated with the same material was dead in twenty-four hours. Among the animals inoculated in November, 1880, were five heifers which had been put to the bull for the first time in September—sixty-six or sixty-eight days before the intravenous inoculation. They all brought forth calves in due course—one at eight months, but it lived. These five calves were inoculated in from twelve to sixteen days after birth, with very active virus, but no harm was done; the local action was *nil*, the general effects insignificant.

Consequently, it is affirmed that a female of the bovine species which receives this immunity against Anthrax during gestation, transmits it to its immediate progeny—though whether its future progeny are so endowed cannot be stated. Two facts, however, are worthy of being noted. Two heifers protectively inoculated in November, 1880, though put to the bull in the previous September, were not in calf when so inoculated. They were subsequently fecundated—one twenty days, the other three and a half months after inoculation, and by a bull inoculated at the same date, and consequently endowed with immunity. The two calves produced by these heifers resisted the test inoculation as successfully as the other five. In these instances did the calves receive the immunity from their mother or father? Experiments which are now being conducted by these zealous professors will, in all probability, furnish a response to the question.

In the meantime, we may observe that Rossignol had a lamb born from a ewe which was inoculated during pregnancy, and this creature, when six months old, was inoculated with active uncultivated virus, in order to ascertain whether the immunity was transmitted to it. The lamb died.

AN EPILEPTIFORM DISEASE OF DOGS, CAUSED BY AN ACARUS IN THE EARS: AURICULAR ACARIASIS.

It is now some years (1836) since Professor Hering, of the Stuttgart Veterinary School, discovered in an ulcer in the interior of a dog's ear an acarus, which he thought was a sarcopt. In 1849 it was again discovered by Nicolet, Lucas, and Sallé; by Bendz, of the Copenhagen Veterinary School, in 1859; by Zürn and Schirmer, of Potsdam, in 1874; by Guzzoni, of the Milan Veterinary School in 1877; and Mégnin, Veterinary Surgeon in the French army, found it in 1878 in the ear of the cat and ferret. Bendz, in the *Tidsskrift för Veterinarer* (Vol. VII., p. 1), correctly described and figured it, though the first minute description was given by Zürn in his "Schmarotzer." Bendz designated it the *Symbiotes canis*, and compared it to *Symbiotes bovis;* Zürn named it the *Dermatophagus canis;* while Guzzoni termed it the *Symbiotes ecandatus auris canis*. But after the rules of zoological nomenclature, it has been finally denominated the *Chorioptes ecandatus* by Mégnin. In 1881, in a communication made to the Société de Biologie, of Paris, Mégnin announced that he had discovered the same acarus in the ears of sporting dogs affected with epilepsy. And in the *Archives Vétérinaires* for last March (p. 201) Professor Nocard, of the Alfort Veterinary School, directs attention to it as the cause of Auricular Acariasis, producing an epileptiform disease in hounds.

Seeing the importance of being not only able to diagnose between certain nervous diseases and Rabies, but also of arriving at definite conclusions as to their cause, as well as formulating rules for successful treatment, we think it will interest our readers, and probably benefit canine sufferers, if we allude to the subject in somewhat of detail.

In his communication to the Biological Society, Mégnin states that a few days previously he had been witness to a very extraordinary malady among sporting dogs, which, in the words of their owner, made them look as if consumptive, and caused them to die, after months of suffering. This state of affairs had been going on for several years among the dogs, which were of different breeds, while animals purchased to replace them were attacked in three or four months with the disease, and inevitably succumbed. His kennel-keeper was in despair, for notwithstanding disinfection, lime-washing, and other measures, the mortality did not diminish. Mégnin, being consulted, had a diseased terrier sent to him, in order that he might study the malady; this animal was so seriously affected that the owner was about to have it destroyed.

For eight days Mégnin had the dog under constant observation, and noted the epileptiform seizures, which occurred generally while at exercise, and also remarked the frantic and almost continuous shaking of the ears. Having examined the interior of these, he found that the external auditory canal was covered by a thick layer of cerumen of a sooty colour. This wax being collected and examined microscopically, there was found in it an immense number of acari, which Mégnin recognised as his *Chorioptes ecaudatus*, and which he had already found in other dogs, as well as in cats and ferrets, and had ascertained as having its *habitat* exclusively in the auditory canal of these carnivora. He had also noted that this parasite, when infesting the ear of the cat, by the titillation it excited, produced fits of fury; but until now he was not aware that, in the dog, these fits might simulate Epilepsy. The proof that this parasite was really the cause of the disease in question, was that repeated injections of sulphide of potassium (one to twenty of water) caused the epileptiform seizures to completely disappear in the dog sent to him, and he had no doubt that the same treatment would have been successful with the other dogs in the pack; which treatment was, in fact,

recommended. At the same meeting of the Biological Society, Mégnin exhibited the two ears of a rabbit which had died from an analogous affection, though the parasite which produced the malady was the *Psoroptes longirostris*—a species common to the horse and rabbit, and which, in this instance, had given rise to a veritable Otitis that, from being external, became internal, and ultimately proved fatal. He also showed the foot of a fowl, which was covered with whitish tubercles to such an extent that its diameter was quadrupled and deformed. These tubercles were composed exclusively of stratified layers of epidermis, imbedded in the lower strata of which were myriads of female *Sarcoptes-mutans*, all occupied in laying eggs. The designation of *Sarcoptes-mutans* was given to these acari by Professor Robin, from the fact that when they arrived at the ovigenous age they lost their ambulatory suckers—a change which quite altered their appearance. They do not form galleries, and are not transmissible to the horse.

Professor Nocard remarks that sporting dogs are often decimated by a mysterious, unnamed disease, the most characteristic symptoms of which are the sudden appearance of epileptiform crises, without any premonitory indication. Certain kennels are particularly scourged by it, notwithstanding everything possible in the way of medical treatment or hygienic management, of crossing the breed or importation of new dogs—all is ineffectual, the malady still goes on ravaging the packs, and attacking the majority of the inhabitants of the infected kennels. He knew of a kennel containing usually about fifteen couples, in which, during eight years, more than sixty hounds had died or been destroyed, suffering from the affection.

While the animals are at rest, nothing is seen in the infected hounds to indicate the existence of the malady; the animals are as lively and in as good spirits as any of the non-infected, and when out hunting are quite as ardent until, in about half an hour or an hour's run, all at once they give out a loud cry or scream, which the whip at once recognises as the sign of an attack of the disease. The creature then behaves as if at fault, bounds from side to side with haggard eye and foaming mouth, running against anything that comes in his way, until turning in a circle two or three times, he falls down in a fit of Epilepsy. When the crisis has passed, he gets up looking stupid and fatigued, and if the attack has not been too violent, or the disease not of long standing, he may, after resting a quarter or half an hour, emerge from his apparent apathy, and enter on the chase with as much ardour as before. While affected, however, the aspect of the animal is so terrifying, and the attack so sudden, that people are inclined to destroy him in order to prevent accidents. It does not always happen that an opportunity is afforded for watching the symptoms through all their phases. After emitting the cry of distress, the hound may run away and be absent for a variable period, when he may again join his companions without any one knowing where he had been.

For a long time there is nothing that distinguishes the diseased from the healthy when in the kennel ; but, as the malady becomes chronic and the attacks while hunting more frequent, the hounds become more sulky and savage than usual ; they retire into a corner of their kennel, keep away from their companions, and do not join in their barking or play. At a more advanced stage, the attacks are so frequent and serious, that scarcely have the animals commenced to run than a seizure takes place; and, if they do not die on the spot, after recovery they refuse to go on. At no time does an attack take place when the creatures are not hunting.

The diseased animals may become completely stupid and quite useless ; sometimes they are *quite deaf;* but at no period have they an attack of Epilepsy while in their kennel, so long as they are not excited. Indeed, it would appear that so long as they do not hunt, no matter how active the exercise may be, there is no attack, for one of the huntsmen informed Nocard,

whom he consulted with regard to the disease, that he could not induce it by compelling hounds to follow his carriage from Versailles to Paris, though these animals were quickly seized with it when hunting.

When first consulted, Nocard was much puzzled as to the nature of the affection, and, surmising that it might be caused by intestinal worms, he prescribed anthelmintics, although the owner of the hounds assured him that no worms had ever been found in the intestines of the hounds he had killed, and that old dogs were as frequently affected as young ones. No worms were expelled after the administration of the remedies, and the ravages of the disease were as great as before. At his request a young dog—a basset or "turn-spit"—which was usually attacked before it had hunted a quarter of an hour, was sent to Alfort and kept there for six months, everything relating to it being closely investigated—the blood, fæces, and urine being examined weekly, without result; all the known anthelmintics were successively administered, and it was made to run in a circle for hours together, without presenting any of the phenomena of Epilepsy, so that nothing could be learned as to the cause of the disease. It was at last killed, as it was hoped that an autopsy might furnish a key to the problem; but, though a most thorough search was made, no lesion could be discovered. The disease becoming still more serious in the same kennel, so that the owner was about to give up hunting, Nocard made another close inspection of the pack, but without result; and, having procured the heads of two of the hounds which had just been killed, he examined the brain and medulla, but could discover nothing abnormal. Casually glancing at the ears of both heads, he found in the external auditory canals of each, and quite at the bottom, a somewhat considerable mass of cerumen, of a chocolate colour and the consistency of mastic, lying so close to the tympanum as to push it inwards. A microscopical examination of some of this wax, pressed between two glass slides, revealed the presence of a considerable number of acari in all stages of development—males and females, isolated and in couples, nymphs, eggs, etc., belonging to the genus *Chorioptes* (*Symbiotes* of Delafond), and of the species which Mégnin has named *Chorioptes ecaudatus*.

But it did not settle the question to find these acari in this situation; it was necessary to be assured (1) if their presence was not a mere coincidence; (2) if the *Chorioptes ecaudatus* is not an ordinary inhabitant of this canal in all dogs, or at least in a great number; and (3) if its presence in the neighbourhood of the tympanum was really the cause of the Epileptiform seizures observed. The first question was soon answered, as another sportsman residing at Versailles wrote to M. Bouley, with regard to the nature and causes of a disease like Epilepsy which had affected the greater portion of his hounds. The first attacked had been shot when out hunting, as a measure of precaution; then several others showing the same symptoms, the owner saw that he had a different disease to deal with than Rabies. Next day he brought to Alfort the carcase of a dog that, while out hunting the previous evening, was attacked and died. Nocard found crowds of acari in the wax obtained from the vicinity of the tympanum. Other dogs which had died while hunting, or were destroyed in consequence of the disease, were afterwards forwarded, and in every one the same lesion was noticed, exactly limited to the deeper part of the external auditory hiatus, and without anything to be seen or felt in the external parts of the ear. Nocard therefore came to the conclusion that all the dogs attacked with this Epileptiform disease had these parasites in their ears.

In order to discover whether other dogs were so infested, or whether the parasites were special to epileptic hounds, Nocard examined all the dogs which died or were killed at the Alfort Veterinary School—thirty in all, fifteen of which were killed because of old age or virulent bites, and fifteen

because of different diseases; but in the ears of none of them were any acari found. The presence of the acari was not, therefore, a common occurrence.

The problem, therefore, now was whether they were really the cause of the disease. This could be tested, either by placing some of the infested cerumen in the ears of healthy dogs, or destroy the parasites in the ears of diseased animals, and see whether the epileptiform seizures persisted or ceased. Both plans were tried, and it was found that parasites transferred from the ears of affected animals to those of dogs in perfect health became readily "acclimatised," and in less than a month the small morsel of cerumen had given rise to numerous prosperous colonies of the *Chorioptes*. The dogs so infected also manifested the symptoms just described when they were greatly excited during hunting.

The most marked results were, however, obtained by curative or parasiticide measures. Two dogs were sent to Nocard to deal with as he thought fit. One was quite deaf and the other could scarcely hear, while both had been the victims of numerous attacks of epilepsy—in fact, they could not run for many minutes without having one. After many trials, he adopted the following formula :—Olive oil, 100 parts ; Naphtol, 10 parts; Sulphuric ether, 30 parts. (To be kept in a well-stoppered bottle.)

Every day this liniment was to be injected into the ear, which was then to be plugged for ten to fifteen minutes with cotton wool, to prevent the evaporation of the ether. Of all the acaricides, remarks Nocard, naphtol has yielded the best results. It is a pyrogenous product, very soluble in oil, and more efficacious, while less irritant and odoriferous, than carbolic acid. To the oily solution he adds the thirty per cent. of ether, in order to facilitate the penetration of the liniment into the oftentimes dense mass of wax which harbours the acari.

This topical remedy yielded such good results in the two, supposed to be incurable, cases (for in a few week they had completely recovered their hearing, and were lively, sociable, etc.), that in February last they were returned to their homes to be employed in hunting, and they were found to be entirely free from the former alarming symptoms when so engaged day after day, for hours together.

All the dogs in the kennel were then similarly treated, and the malady has disappeared.

With regard to the way in which these acari produce the epileptiform symptoms, it was at first suspected that they gave rise to serious alterations in the internal ear—to a kind of acariasis like that met with in the ears of rabbits affected with ear scabies ; but there was no lesion of this kind found in the dogs. It is therefore exceedingly probable that they give rise to a reflex kind of epilepsy, allied to the spinal epilepsy of Brown-Sequard, or the nervous disorder known in man as "Menier's disease." And it may be that the elevation of temperature which takes place while the dogs are actively hunting, increases the movements of the acari, and consequently augments the irritation set up by them.

If this explanation be accepted, it demonstrates the influence that irritation or disease in the ear may exercise on the system generally, and the rapidity with which the most alarming symptoms occasioned thereby may disappear when the irritation or disease is subdued by appropriate remedies.

Experimentation and clinical observation have shown that irritation or compression of the nerves of the semi-circular canals of the ear will occasion disturbed equilibrium, and fits of derangement, such as fury or sullenness, reflex acts of crying or screaming, etc.

HORSE-POX.

NOTWITHSTANDING all that has been said, written, and demonstrated as to the existence of a veritable Horse-pox or Variola, there are still some persons who are sceptical, and who are inclined to assert that what has been taken for this disease is another non-variolous malady. In "Veterinary Sanitary Science and Police," in our pamphlet on "Human and Animal Variolæ," in this Journal and elsewhere, we have offered abundant evidence, derived from our own experience and that of others, to prove that the affection does exist, and that it has been witnessed not only in this country and on the Continent of Europe, but that it sometimes appears in an epizöotic form in America. In corroboration of all that has been already stated as to the existence of Horse-pox, and its close relationship to, if not absolute identity with, Vaccina or Cow-pox, we now have an interesting note on it from the pen of Professor Peuch, of the Toulouse Veterinary School (*Revue Vétérinaire*, July, 1882), showing that it is present in North Africa. It appears that, in October last, the professor was in Algeria, and while at Boufarik, a communal veterinary surgeon, M. Renaud, showed him a fine example of the vaccinogenous disease in a Barb stallion, aged four and a-half years, belonging to one of the principal colonists of the Mitidja. The symptoms were as follows: Around the nostrils numerous flattened, discoid, umbilicated pustules, the size of a lentil, some of which were in process of dessication, and others from which, by slight pressure, a limpid humour of an amber colour could be forced. Toward the inferior commissure of the left nostril was noted a superficial ulceration, the size of a silver five-franc piece, with festooned border, and covered in places with crystalline, yellow, and transparent crusts; elsewhere the derm had a bright red tint and a finely areolated aspect. A yellow, serous fluid was discharged from the nostril. The pituitary membrane was highly injected, especially on the side from which the discharge came, and where could be seen on the nasal septum vesico-pustules the size of a small pea, round in shape, and white or yellowish in colour. In the mouth, and particularly within the lips and on the lateral surfaces of the tongue, there were a multitude of small vesicles of a pearly aspect, and the size of small peas; some of these were isolated and intact, but the majority were confluent and as if eroded in their centre. A viscid saliva flowed abundantly from the mouth while it was being explored. The subglossal glands, particularly those of the left side, were swollen, hot, and painful on manipulation. On the sides of the neck, shoulders, sides of the body, the lower parts of the limbs, and hollow of the pasterns, the hair was erect in places and formed small tufts. In passing the hand over these regions, small lenticular nodules were felt—these were the Horse-pox pustules, some dried up, others secreting. The horse appeared dull and prostrate, and was slightly feverish; the appetite was diminished.

From all these appearances, there was no hesitation in pronouncing the case one of Horse-pox, and it was decided to collect some of the fluid exuding from the pustules and keep it between plates of glass. This was done by M. Renaud, and it was arranged that he was to inoculate some animals of the bovine species with the fluid. In a letter from him, dated November 4th, Peuch was informed that four calves, from five to ten months old, had been inoculated, and that Cow-pox was the result. He also stated that three horses which had eaten out of the manger the other horse had been fed from, were attacked at that date with well-marked Horse-pox—showing that transmission of the disease may take place in this way. Peuch, who had in the meantime returned to France, wrote for some Horse-pox virus, and also for some of the Cow-pox lymph which he had produced; this was received on January 15th, and on the same day, along with Professor Bidaud,

of the Toulouse Veterinary School, he inoculated at the experimental farm of the school: 1, An Ayrshire cow in advanced pregnancy, about nine years old, with the Horse-pox lymph, previously mixed with a drop of tepid water —as it was dry; about twenty punctures were made in and around the vulva and in the perineal region; 2, Another cow equally advanced in pregnancy, seven years old, with the Cow-pox lymph derived from the Horse-pox, and operated upon in the same way as the other.

On January 19th—the fifth day after inoculation—there was no trace of inflammation at the punctures, and with the exception of one or two of these, which were slightly papulous, all seemed to be healed up, so that Peuch thought his experiment would prove sterile. He was, however, agreeably surprised at finding on the 24th of that month, while on his weekly visit to the farm with the students, that the majority of the punctures he had made ten days previously, and which were invisible on the 19th, were now transformed into fine vaccinal pustules, surrounded by a rose-coloured areola. On the 25th the two cows were brought to the veterinary school, where two fine Dutch heifers, one seven, the other fourteen months old, were vaccinated from them. In five days each puncture had become a pustule, and the Doctors Armieux, Jougla, Caubet, and Parant, who were invited to inspect these heifers, recognised the true nature of the vaccinal eruption presented on the perineum and teats.

From this eruption were inoculated calves and heifers up to the end of last May, and the vaccine lymph obtained from them has been employed to vaccinate about fifteen hundred persons.

REMARKS ON A NEMATOID HÆMATOZOON DISCOVERED BY DR. GRIFFITH EVANS, M.R.C.V.S., IN A CAMEL.

BY SURGEON-MAJOR T. R. LEWIS, M.B.*

Dr. Lewis observed that the occasional presence of nematoid organisms in the blood of various animals had long been ascertained, and that it would be known to some of the members that, about ten years ago, he had drawn attention to the fact that in India a somewhat similar condition was observable in man, and that this condition was associated with certain forms of grave disease. Since this period the literature of the subject had very rapidly increased, and numerous confirmatory observations had been made in various parts of the world. Our knowledge of the hæmatozoa of lower animals had also been very greatly extended during the same period, and of recent observations of this kind the most important which he knew of was one which had been made by Dr. Griffith Evans, the present head of the Veterinary Department in Madras, who, whilst making a *post-mortem* examination of a camel at Dera Ismail Khan, in October, 1880, found that the blood of the animal swarmed with the brood† of a nematoid parasite resembling the hæmatozoon found in man. Dr. Evans found, furthur, that the parental form existed in the lungs, the pulmonary arteries of which were plugged in by tangled masses of the thread-like parasites. They were also found in the mesentery. A comparison of these hæmatozoa with those found in man shows that whereas the embryonal forms of both kinds are indistinguishable under the microscope, nevertheless the mature form as met with in the camel differs, both as to size and structure, from the only male and female specimen of the mature form met with in man

* From the Proceedings, Asiatic Society of Bengal, for March, 1882.

† This was found before the camel was killed. *Vide* my report on *Surra*, paragraph 15 (camel No. $\frac{8}{7\,9}$), when I also stated that I found one specimen in a horse also. This is not the parasite of Surra.—*G.E.*

which has hitherto been obtained in India, and so far as the speaker was aware this hæmatozoon of the camel differs from any hitherto described parasite. Should further enquiry confirm the supposition that the parasite is new to science, he proposed that it should be called *Filaria Evansi.*

Dr. Lewis submitted mature specimens of the *Filaria Evansi* and of the *Filaria sanguinis-hominis* to the meeting, as well as samples of the microscopic embryos of both kinds : and furnished the following preliminary description of the mature hæmatozoon of the camel.

Filaria Evansi, sp. nov.

The *male* measures from 3 in. to $4\frac{1}{2}$ in. in length, and from $\frac{1}{80}$ in. to $\frac{1}{48}$ in. transversely at the widest part. At the oral end the width is about $\frac{1}{250}$ in. and about one-third of an inch lower down the width equals $\frac{1}{90}$ in. The tail tapers to a blunt point, and is curled into two or three coils. There are two spicules ; the longer measures $\frac{1}{25}$ in., and the shorter $\frac{1}{150}$ in. The cloaca is situated at $\frac{1}{222}$ in. from the end of the tail. The bursa is small, and is characterised by four pairs of pre-anal and two pairs of post-anal papillæ, with a fifth post-anal papilla close to the tip of the tail. The mouth does not manifest any well-marked lips. The œsophagus is $\frac{1}{4}$ in. long by about $\frac{1}{200}$ in. wide ; and the cæcal commencement of the sperm tube may, in well-prepared specimens, be detected lying near the junction of the œsophagus and the intestine. The sperm tube measures about $\frac{1}{400}$ in. transversely, and the intestinal canal about $\frac{1}{170}$ in.—both measurements being made towards the middle of the body of the worm.

The *female* is, speaking generally, about double the size of the male. It is from 6 in. to 8 in. long, and from $\frac{1}{50}$ in. to $\frac{1}{32}$ in. across, at the widest part. The mouth is simple and somewhat pointed, the width of the parasite at this part averaging $\frac{1}{225}$ in. The tail is blunt—terminating in a slightly clubbed or funnel-shaped enlargement ; its width at the extreme end averages $\frac{1}{160}$ in., but a little higher up its diameter is somewhat less—$\frac{1}{200}$ in. The œsophagus averages 3 in. in length, and $\frac{1}{180}$ in. in width, and the intestine about $\frac{1}{170}$ in. The anus terminates at a spot about $\frac{1}{100}$ in. from the caudal end. The genital orifice is about $\frac{1}{40}$ in. from the mouth. For about a quarter of an inch from the orifice the genital tube presents nearly the same diameter, viz., about $\frac{1}{280}$ in., and then it rapidly widens to $\frac{1}{100}$ in., and subdivides into two utero-ovarian tubules, each measuring $\frac{1}{180}$ in. transversely. The tubules are generally packed with embryos averaging $\frac{1}{125}$ in. in length by $\frac{1}{4500}$ in. in width. Lower down, ova, in various stages of differentiation, and embryos are mixed together.

The specimens examined had been for a short time in spirit ; they were of a yellowish-white appearance and female specimens more numerous than males. There was no marked difference as to firmness of texture between them. A fuller description of the minute anatomy of the parasites has been prepared, and is nearly ready for publication.

GOITRE IN SHEEP.

There is no disease with which sheep are afflicted more to be dreaded than this, none more erratic in its attacks, and none where we know so little of the causes that induce it. On this latter point we indeed have a vast amount of speculative theory. Breeders who have had very little experience with the disease are generally quite ready to name causes that to their minds seem conclusive ; but those who have had the most experience, and from observation and investigation of its causes and effects are best qualified to judge, have generally come to the conclusion that they know as little

about the inducing causes as our family physicians know about those that induce scarlet fever. While the two diseases are entirely unlike, both in their nature and their effects upon the system, there are many circumstances attending them that are similar. Both diseases assume different forms, both are eccentric in their attacks and effects, and generally it can be judged only imperfectly what the final result will be—whether the patient will fully recover and be entirely rid of the disease, or any effects from it, or, if not immediately fatal, whether the after effects may not so weaken and poison the system as to undermine the constitution, and eventually destroy the value and usefulness of the patient.

Like scarlet fever, goitre is in most cases confined to the young ; except in rare cases adults are not afflicted with these diseases. Generally, in sheep, the few cases of goitre found in animals older than lambs probably had their start, or inception, when the lamb was dropped. There is reason to believe that in this respect the disease afflicts the human family differently, though some medical authorities set it down as a disease that afflicts young females more than others. It is singular that in sheep the animal is afflicted with the disease at its birth. It may have been so very slightly developed as to have escaped notice, or have at first produced no visible deleterious effects upon the system ; but we think in all such cases investigation will prove that there were more or less cases in the flock at the time the lamb was dropped, and the after appearance of the disease was only the development of the seeds of it that had escaped notice at the time of birth.

It may be confined to one locality or barn on a farm, and not exist in another barn on the same farm, or in the immediate vicinity.

The disease that attacks sheep, and is generally called goitre, in some cases causes a swelling of the thyroid glands, that finally and quite rapidly disappears, and in others suddenly enlarges and suffocates the lamb soon after being dropped. In some few cases, after a time—it may be years—it develops into real goitre.

Another phase of the disease causes what are called soft lambs, resulting from defective nutrition *in utero*, that sometimes have small swellings on the glands of the neck, sometimes large, and sometimes have scarcely any that are perceptible. The coat is usually a long, soft, silky hair on the sides, and partially over the other parts of the body, very different from the usually woolly coast or the jany hair that is often the coat of Merino lambs when dropped. The abdomen is usually, in this phase of the disease, much swollen, showing a dropsical tendency. This form of the disease is not common when there are but few cases in a flock, but very common where a large proportion of the flock drop goitred lambs. It is in such cases as these that there seems great uncertainty what the final effect of the disease will be. We have known cases where what were called soft lambs were so weak when dropped, that at first it seemed impossible for them to live ; they were unable to stand for a week, but finally recovered. In other instances, those that were able to stand at first gradually grew weaker, and finally died, after a period of from one to two weeks ; others would, after appearing to grow better for a few days—sometimes a few weeks—be afflicted with what some breeders call the rickets, stagger about, after a while become so badly affected as to be unable to stand ; at which time the discouraged shepherd will generally end the sufferings of the patient by cutting its throat. We noticed such a case last year—a lamb that, although soft at first, not badly so, seemed to recover, and grew strong and quite fleshy, but in three or four weeks became paralyzed, and although otherwise apparently healthy, could not stand. It would roll and wallow about, looking up piteously pleading for help and food, which to the last it took with a keen appetite and hearty relish. Some cases have been successfully treated by inserting a rowel on

the top of the shoulders, and others, where the enlargements on the glands were larger and strangulation therefrom threatened, by removing one of the tumours by a surgical operation. Large, hard tumours have been removed from older sheep, but they frequently do not survive long. In the case of a ram four years old, from the neck of which was removed a goitre weighing four pounds, the feeder for which from the jugular vein was nearly or quite as large as the vein itself, at first, the animal lost considerable blood, but had apparently a good deal of strength, and ate with a tolerable appetite ; however, at the end of twenty-four hours he began to droop, and died the second day after the operation was performed. It is doubtful whether in this case the sloughing off of the ligaments binding up the artery would not have been followed by immediate death from bleeding from the jugular vein, had not the immediate shock to the system proved too much for the vital forces of the patient. The tumour itself was hard, with small veins or arteries running all through it, encased with muscle of a fungoid nature, with deposits of lime throughout the whole bunch. This latter feature has led to the supposition that drinking lime or hard water might cause ewes to have lambs with goitre ; but since cases occur where flocks are afflicted with goitre when the ewes have no other water to drink during the season of pregnancy but soft, rain water, caught in cisterns from the roofs, these facts seem to overturn that theory as effectually as other facts do other theories in regard to the cause of this disease.

It is very common to name high feed and want of exercise for the ewes during pregnancy as probable causes, but there are many instances where these could not be given.

We recall an instance where, in the early winter of 1880-81, after the ewes of a flock had been served, they were sold, the younger and fleshier portion to one purchaser, who afterwards kept them very high, and very closely confined, until they dropped their lambs. These came very strong and healthy. The thinner and older ewes were sold to another purchaser who gave them moderately good keeping and exercise. Among these were several cases of goitre. The same season, another flock, after they had been served, were divided, a part being taken away from home and wintered with another small flock. Both portions were kept in moderate condition, with reasonable exercise. About a week before the lambing time, those away from home were brought back, and kept with the others, until they had all lambed. The lambs from both portions were badly affected with the disease, there being very few perfectly healthy ones among them. Some of the worst and fatal cases were among the ewes that first dropped their lambs, and of the portion of the flock wintered away from home, while the flock where they were wintered had no diseased lambs. In addition to the exercise of two large yards, and a very large, roomy, and airy shed, the portion of the flock taken away were driven over five miles, only about a week before they commenced to drop their lambs. This same flock of sheep, during the past winter kept together, fed grain much more liberally, with about the same amount of exercise as the winter before, certainly no more, have come out in much higher condition, and have dropped a very healthy lot of lambs.

It is the opinion of some that the stock from certain rams are more liable to have goitre than that from others. It is a curious fact, that in the case of the flocked named, a large portion of the ewes were served away from home, no less than nine different stock rams having been used the fall of 1880. There was no appreciable difference in stock from the different lambs in their being affected by the disease. It is true the lambs sired by some of the rams were affected, and those from only two of them were exempt ; but investigation, where these rams had sired other lambs, failed to show that

the stock from one was less or more liable to be affected by the disease than that from the others.

We knew of a very promising young ram being sold for 40 dols. that had large goitre tumours on his neck ; the same ram, at the time, could have been sold readily for 1,000 dols. if he had been sound and healthy. He was used extensively, and proved an excellent stock ram ; no complaint was ever heard that his get were more affected with the disease than the stock from any other ram ; it was even claimed his get were more free from it than that of other rams.

This is a congenital defect, and although, as stated above, sheep that have been affected with goitre have been used for breeding purposes without apparent bad results, still we should advise, that in order to guard against any possibility of perpetuating disease, such stock should not be put in the breeding flock.

In regard to remedies, in certain phases of the disease, some may be used successfully, where there are small or moderate swellings on the thyroid glands ; tincture of iodine, reduced somewhat by about equal parts of hog's lard, or some penetrating oil, and spirits of camphor, applied directly over the tumours, and rubbed in until fully absorbed, will sometimes scatter them. In the case of what are called soft lambs, little can be done except to nurse the patient carefully and persistently until it dies or improves. Unless a paralyzed condition of the limbs sets in, many of them may thus be saved.

Where there is a tendency to drop the head, as is often the case where this disease prevails in a flock, a small box, so constructed that the lamb cannot get his head down when lying, will serve in a majority of such cases.

As a preventive, it is recommended to mix a moderate quantity of powdered nitre with the salt fed to the ewes for a few weeks before lambing. As nitre acts upon the blood quite directly, it is an excellent preventive ; but the great difficulty in determining the value of any preventive must be negative, unless some cases can be found where it has failed ; for where the lambs come healthy, after using it as a preventive, there is nothing to prove they would not have been equally as healthy if it had not been used. One breeder claimed to us he had used this remedy for some years, and had had no goitered lambs since he had commenced using it ; but there are many breeders who have uniformly had healthy lambs who have never used it.

In the human family the disease is more prevalent in damp, low, and malarious situations, and it is probable that it will prevail more extensively among sheep kept in such localities. It is a self-evident fact that dry, airy quarters, with plenty of exercise, are best and most healthy for sheep, and tend to give them that constitutional vigour that best resists the action or attacks of any disease. Breeding ewes should, if possible, have such quarters ; if they do, these may be warm, and the sheep may be liberally fed, without any fear that the warm quarters or the extra condition of the ewes, will invite any attack of the goitre.—*National Live Stock Journal.*

PULMONARY GLANDER NODULES.

WHAT have often been designated "Miliary Tubercles," and alluded to as showing the existence of Phthisis in the horse, have for some time been carefully examined by Continental veterinary authorities (*Veterinary Sanitary Science and Police*), with the result that the formations have been more especially identified as pathognomonic of Glanders. Csokor has recently concluded, from extensive observation, that there are two kinds of nodules which veterinary surgeons often mistake for glander tubercles. Of these there are small round tumours, variable in size, composed of

yellowish-white, or grey matter, fibrino-cellular in structure, contained in a dark red capsule, and in which the normal elements of the middle coat of the blood-vessels can be perceived by the aid of the microscope; these nodules are, in reality, vascular emboli. The other nodules are white, hard, compact, homogeneous, and are oniy the others in a more advanced stage of embolism. The glander tubercles are readily distinguished from these nodules by their well-known histological structure, the principal feature in which consists in the rapid destruction of the lymphoid elements in the centre of the tubercle.

With regard to the embolic nodules, they may pass through the following phases: 1, Peripheral hyperæmia, sometimes running on to hæmorrhage, followed by inflammation, with diapedesis of the white globules and infiltration of the lymphoid elements of the fibrino-cellular mass included in the vessel; 2, Development of neo-capillaries in the walls of the blood-vessel and in the substance of the embol, the disintegration of which is gradually effected, as in all cases of organised thrombosis; 3, Disappearance of the hyperæmic zone, which is replaced by embryonic fibrous tissue, constituting a small, hard, solid mass, white in colour and homogeneous in structure.

Uspenski, in his researches into the structure of the glander nodules, arrives at the following conclusions: 1, Their formation in the lungs of the horse and mankind always commences by inflammatory alterations; 2, These alterations are usually those of catarrhal or fibrinous Pneumonia, in patches; 3, The appearance of these detached patches of Pneumonia is due to the irritation of the pulmonary parenchyma by the Glander contagium—that is, by *Bacilli;* 4, The Inflammatory process always passes on to destruction of the involved tissue, the inflammatory products being constantly invaded by fatty and caseous degeneration; 5, The pulmonary epithelium takes an active part in this neoplasmic process, in giving origin, by proliferation, to the large epitheloid cells of tubercle, to pus globules, and, lastly, to the embryonic fibrous tissue at the periphery.—*Virchow's Jahresbericht.*

THE FELLOWSHIP DEGREE.

On July 18th, an examination was held at the Royal College of Veterinary Surgeons, of candidates for the degree of Fellow, Professor Duguid, the Dean of the College of Preceptors, and Messrs. Collins and Fleming, being the examiners. The following gentlemen successfully underwent the examination, and became Fellows: Messrs. Oliver, Cooper, and Rayment, Army Veterinary Department; and Messrs. Sperring and Hedley, Veterinary Department, Privy Council, Dublin. The questions in the written portion of the examination were as follows:—

Pathology.—1. Give the pathology of Fever, and describe the different kinds, with reference to the characters which distinguish them.

2. Describe the following Neoplasmata: (*a*) Fibromata; (*b*) Myxomata (*c*) Melanomata; (*d*) Carcinomata.

3. Give the pathology of Diphtheritis, and briefly describe its manifestations in animals.

Epizoötiology.—1. Describe the various forms Influenza assumes in the horse, and give your opinion as to the influence or influences upon which its geographical extension depends.

2. Enumerate the different species of domestic animals to which Anthrax may be transmitted, their degrees of susceptibility, and the various way in which natural infection may take place.

Surgery.—1. Describe the operation of *Lithotomy* in the horse—(*a*) mode

of securing the patient, (*b*) details of the operation, (*c*) instruments employed.

2. Describe the operation of *Neurotomy*, both high and low.

3. Describe the best methods of administering *Anæsthetics* to the (*a*) horse, (*b*) cattle, (*c*) dog.

Sanitary Science.—1. State the various causes which produce *Damp Stables*, and how they are to be remedied.

2. Explain the action on the skin by the use of the horse-brush, and name the diseases which usually arise from defective grooming.

Dietetics.—1. Describe the various changes, chemical and other, which *Hay* usually undergoes from the time when, as grass, it is first cut until it becomes what is known as old hay.

2. How should young horses be treated when first stabled as regards (*a*) stables, (*b*) diet, (*c*) exercise?

Anatomy.—1. Describe the structure of the choroid coat of the Eye, including the iris, and state the differences observed in the pupillary opening in the different domestic animals.

2. Describe the characters of the mucous membrane of the large Intestine, and state how this portion of the alimentary canal is arranged in the horse, ox, sheep, and pig.

Physiology.—1. What is Urea? Where is it formed? State the conditions which may increase or diminish its quantity in the urine.

2. Describe the structure and functions of a Lymphatic Gland. State what relation the great serous cavities bear to the lymphatic system.

Therapeutics.—Describe the physiological and therapeutic actions of Aconite, Belladonna, and Nux vomica. State under what conditions their administration is indicated.

NEW MEMBERS OF THE PROFESSION.

AT a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held on the 5th July, the following students from the Royal Veterinary College were admitted members of the profession :—

Mr. J. J. Dawtrey	Chichester.
„ A. E. Michell	St. Austell, Cornwall.
„ *C. J. Humphrey	Kentish Town, N.W.
„ Thos. Down	St. Heliers, Jersey.
„ H. J. Skinner	Narborough, Leicestershire.
„ Tom Bolton	Camden Road, N.W.
„ J. H. Brown	Wanstead, Essex.

The following students passed their Second Examination on the 3rd and 4th July :—

Mr. B. Checkley.	Mr. T. G. Hewitt.
„ J. T. Twiss.	„ S. J. Blanchard.
„ H. T. Pease.	„ *Thos. Williams.
„ W. R. Ball.	„ Chas. Morgan.
„ *W. F. Shaw.	„ G. W. Beck.

Mr. W. Langdon.

The following passed their First Examination on the 6th, 7th, and 8th July :—

Mr. *A. C. Piesse.	Mr. *E. R. Butler.
„ *G. H. Evans.	„ W. H. Taylor.
„ *Walter Drewitt.	„ J. E. Rickards.
„ *A. C. French.	„ John Brett.

Mr. P. G. Luff.
„ G. H. Golding.
„ J. F. Farrington.
„ W. B. Whigham.
„ *John Hammond.
„ *A. V. Field.
Mr. *H. L. Pemberton.
„ *E. Taylor.
„ *W. Willis.
„ E. J. Catmull.
„ Alex. McRaith.
„ H. A. Higgs.
* Mr. F. C. Mahon.

* Marked thus passed with "Great Credit."

Army Veterinary Department.

Gazette, July 11th, 1882.

Veterinary-Surgeon, First Class, Andrew G. Ross, retires on half-pay.

Obituary.

THE following deaths have been reported: John Fahey, M.R.C.V.S., Londonderry, who graduated in 1847; and W. G. Easton, M.R.C.V.S., Woodford, a graduate of 1863.

The death of J. H. Farrow, M.R.C.V.S., London, who graduated in 1861, is likewise reported.

Mr. Samuel Amis, M.R.C.V.S., died at his residence, Great Yarmouth, on May 21st, aged seventy-one years; he graduated in 1833. The first fifteen years of his professional career were spent at Wisbech, Cambridgeshire, where he had a good practice. He then devoted himself to agricultural pursuits at West Walton, and for the last few years led a retired life at Great Yarmouth.

Proceedings of Veterinary Medical Societies, &c.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE meeting of this Society was held on the 8th of June, at 10, Red Lion Square. The President, Mr. J. Woodger, jun., occupied the chair. The other Fellows present were Messrs. H. K. Shaw, G. Fleming, J. Moore, W. Hunting, A. Broad, C. Sheather, H. J. Hancock, G. Gray, and A. B. Daniel. A discussion which was to have taken place on the subject of Rabies was adjourned on account of the interest taken by the meeting in the pathological specimens exhibited.

Mr. HUNTING showed a small stone and a cork which he had taken from the stomachs of two dogs. The first was a small black-and-tan bitch, which was suddenly seized with vomiting and convulsions. Fits always followed the administration of solid food, Mr. Hunting therefore looked upon the stomach as the seat of the mischief; he ordered Brand's Essence of Beef to be the only nutriment allowed, and gave hydrocyanic acid, and occasionally trisnitrate of bismuth; improvement occurred, but as soon as meat or even ordinary beef-tea with sediment was given it was vomited. The dog died in a few days, and the cork was found firmly plugged in the pyloric orifice, the adjacent mucous membrane being much thickened and inflamed. Mr. Hunting laid stress on the point of dietetic value, that the beef-tea made from Brand's Essence was the only form of nourishment retained by the stomach, its perfect fluidity allowed it to be absorbed by the gastric vessels.

The second dog had suffered more or less for six months, it became very thin, and occasionally showed much distress, heaving at the flanks, and suf-

fering from vomiting, fits, and convulsions. The stone found in the stomach was too large to pass into the intestines, and the pyloric orifice was rendered small by an excessive thickening of the coats of the duodenum at this part. Mr. Hunting suggested that it is only when a foreign body attempts to pass the pylorus that convulsions occur, or that irritation of stomach which induces them.

Mr. WOODGER, alluding to several cases of this kind, mentioned that of a mastiff in which he found a large stone in the stomach, but from other evidence he had reason to believe death resulted from carbolic acid poisoning.

Mr. HUNTING, on eliciting that no paralytic symptoms were shown in this case, observed that he had always found Paralysis follow poisoning by carbolic acid.

Mr. BROAD said he had found thickening and inflammation of the first inch or two of the duodenum to be an extremely common disorder in dogs. He thought Mr. Hunting's idea was a sound one regarding convulsions, as the region of the pylorus was endowed with great sensitiveness.

Mr. MOORE instanced several cases of stone swallowing in dogs, also of obstruction of bowels from this cause.

Mr. WOODGER exhibited a portion of a horse's brain, showing a large cystic tumour upon the posterior part of the cerebrum. The horse was a chestnut Clydesdale, it began to bear to the near side when at work, and this tendency became so confirmed that he could not be used. When put into the loose box he continued to walk round, bearing his head against the wall, never caring to seek food, though eating as usual when led to the manger. Mr. Woodger diagnosed tumour of the brain, expecting to find it, as he usually did, upon the plexus choroides, but in this instance it was above the cerebrum over the fourth ventricle. He said he thought the symptoms of abscess of the brain clearly distinguished from those of tumour, from the fact that in the former case coma sets in in the course of twenty-four or forty-eight hours.

Mr. SHEATHER said he was reminded of a peculiar case somewhat similar to the above. The horse he referred to suffered from an unusual form of skin disease, this proved very intractable, and he was turned out to grass ; while these strange symptoms were manifested, he was generally found at the end of the field, which was much elevated ; here he would walk along, carrying his head raised high over the hedge, and then back again in the same manner ; about every fifth distance he fell, and rolled down the slope till his progress was stopped by a brook at the bottom ; from this brook he had to struggle, or be assisted, ten or twelve times daily. He was taken to the Veterinary College ; Professor Axe noticed dilation of one pupil, also a loud noise from obstruction in his breathing.

Post-mortem examination revealed a large thick-walled cyst upon the epiglottis, also three or four cysts upon the brain, they each contained serum with crystalline masses of cholesterine.

Mr. FLEMING considered the tumour under notice was fibrous in character ; he said the majority of cerebral morbid growths contained cholesterine. These forms of brain disease were, he remarked, not uncommon, especially in old horses. In most cases the veterinary surgeon was justified in advising slaughter.

He referred to the case of a horse in which he found a large tumour in each lateral ventricle ; there was no tendency to turn to either side, but much disinclination to move.

Mr. SHEATHER mentioned an instance of double tumour of the ventricles, one of the growths being as large as a hen's egg ; the horse had no inclination to bear on one side, but would occasionally fall and struggle spasmodically, while for several hours together nothing would be suspected to be the matter with him.

Mr. WOODGER next introduced to the notice of the meeting portions of the liver and intestines as well as the hearts of some fowls he had examined.

The number kept was about a hundred and twenty, and they had a run of an acre and a half, they were highly bred, valuable birds. Within the last three months many had fallen ill, being first observed to put up their feathers and froth at the mouth ; a few of them died, and perhaps not more than eight now remained unaffected. Some were examined *post-mortem*, but the appearances found were most diverse ; in one the liver and intestines were studded with tuberculous-like deposit, in others the inner surfaces of the pericardial sac were coated with a powdery deposit ; in one case a dense white tumour was attached to the mesentery, in another a morbid growth covered the tongue and larynx, while in one fowl nothing abnormal was detected beyond a little viscid mucus in the mouth. Some of the birds were killed for the purpose of examination.

Mr. FLEMING recommended that the morbid deposits should be microscopically examined. Fowls were, he said, peculiarly liable to attacks of disease of parasitic nature, which caused great damage. Guinea pigs might be inoculated to test whether the disease was Tuberculosis. The healthy fowls should be removed to fresh ground, as prevention was a point to which great attention should be paid. One diseased fowl introduced among the healthy might contaminate the whole. On the continent much more attention was given to the disorders of fowls than in this country, and he recommended to the profession a book on the subject which had lately been published in Germany,

Mr. HANCOCK thought that examination of the nodules upon the liver would prove the malady to be parasitic, as they did not resemble tuberculous formation.

Mr. WOODGER said it was now too late to attempt separation, the owner had wrongly been removing only the diseased ones, leaving the remainder upon the old ground.

Other Fellows further sustained discussion on the various points of the case.

A. BROAD, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE forty-sixth meeting of the above Association was held on the 9th of June, at the North Stafford Hotel, Stoke-on-Trent.

Members present—Capt. Russell (President), F. Blakeway (Treasurer), H. Olver (Vice-President), R. C. Trigger (Secretary), T. Greaves, H. Blunt, E. Hodgkinson, W. Higgins, H. A. Toulson, J. Coe, C. Ison, A. Hodgkins, A. Olver.

Telegrams and letters of apology for absence were received from G. Fleming, E. Faulkner, T. Hopkin, P. Taylor, R. H. Cartwright, Thos. Taylor, A. Green, W. A. Taylor, R. H. Perrins, H. Stanley, E. Stanley, H. D. Pritchard, F. W. Wragg, G. Bland.

The minutes of the previous meeting held at Derby having been read and confirmed,

Letters from Mr. E. Stanley and Mr. Martin, referring to the proposed testimonial to Mr. Fleming, were then read, when Mr. HIGGINS moved that a subscription be opened among members of the Association in aid of the testimonial fund, which was seconded by Mr. BLUNT, and agreed to. A list was started, and most of those present put down their names.

The SECRETARY announced the death of Mr. John Carless, of Stafford, an honorary associate, and a vote of condolence with the family of the deceased gentleman, moved by Mr. OLVER, and seconded by Mr. GREAVES, was unanimously adopted.

On the proposal of Mr. TRIGGER, the meeting unanimously elected Mr. Blakeway to succeed Mr. Carless, as life member representing the Association of the National Benevolent and Mutual Defence Society.

Mr. E. Cox, of the Army Veterinary Department, Aldershot, and Mr. J. Darby, of Rugby, were duly elected members of the Association.

A letter from Mr. G. A. Banham, in reference to the proposed formation of the British National Veterinary Association, was read. It suggested that two members of the Midland Society should be appointed on the committee for organising the scheme.

Mr. OLVER moved, and Mr. WIGGINS seconded, the selection of Capt. Russell and Mr. Stanley as representatives of the Midland Association, which was cordially carried.

The PRESIDENT then delivered his inaugural address. He said several events had happened during the past year of vital importance to their body, prominent amongst which was the passing of the Bill which recognised them as a profession. Several efforts had been previously made to obtain from the State that recognition which was their indisputable right, but they had been unsuccessful. The great aim of the Act of 1881 was to suppress quackery in the treatment of animal diseases, which was so prevalent in this country. When they considered that there were several thousand unqualified practitioners now in business, they could only wonder that they had remained quiet and allowed such a state of things to continue so long. There might be a few members of the profession who were not satisfied with the Act as it stood, but they must admit that the thin end of the wedge had been inserted, and it remained for them to prove that they were worthy of the confidence reposed in them, and of still further recognition, looking forward to the time when they should reach the height of their ambition, and find themselves admitted to the position in society which was their due. The existence of so many unqualified practitioners bearing the title of veterinary surgeon was due to the apathy of the profession itself, which, by not upholding the rights conferred upon it by the charter of 1844, had lost its power to dispute the right to the title, and any person could with impunity assume the title, and practise veterinary surgery without let or hindrance. Let them take care that in future any person found using the title, or practising without authority and qualification, should be made to appear in his proper colours. It would at the same time have been a great hardship upon those who were earning an honest living as practitioners, if the Act of 1881 had given them no loophole; and it had therefore provided that those who had been in practice five years before the passing of the Act, on their proving themselves respectable members of society, of good morals, and sufficiently acquainted with the rudiments of the treatment of diseases to enable them to carry on their avocation, might be registered as "existing practitioners." A glance at the new register would show the position they would occupy, and it would be the fault of the profession if they presumed on their position. Not one would be registered until the council were quite satisfied of their eligibility; their names would be advertised in the local papers, and they (members of the profession) must prevent any improper candidate from obtaining the coveted certificate. He believed that upwards of 1,500 unqualified practitioners had already applied for registration, and probably another thousand would be added to that number. Not more than two-thirds of the whole would probably be found eligible, and the final decision must not be expected to be made known until the end of 1883, after which date quackery as regarded the veterinary profession would die out. He congratulated them on the passing of the Act, and was pleased that the labours of George Fleming in reference to it were appreciated. There appeared to be a unanimous feeling in favour of expressing their sense of his services, and on the proposition of their friend Mr.

Greaves, it had been decided to present Mr. Fleming with his portrait. If ever a man earned the good wishes of his colleagues George Fleming was that man. (Hear, hear.) It had been proposed to form a National Veterinary Medical Association, and there could be no doubt when they considered the great revolution now going on throughout the continent of Europe in veterinary politics—the inexhaustive researches of Pasteur with reference to inoculation for the prevention of Anthrax and allied diseases, Fowl Cholera, and Rabies in the dog—and Dr. Koch, of Berlin, in regard to tubercular disease—and as regarded the efficiency of inoculation for the prevention of Pleuro-pneumonia epizoötica—these and many other matters of the most vital import—required their most careful consideration. He trusted the time was not far distant when the Government of the country would awaken to the importance of these discoveries, and by sending a deputation of practical veterinary surgeons to the Continent to study them in detail, cause them to be introduced into this country. The important deputation to Lord Spencer, last April, promised successful results. He congratulated the Association on the election of Mr. Perrins as a member of the Council, and went on to say he was rather surprised to find at the annual meeting that the subject of the matriculation examination of students for admission to the various schools was not yet settled. It was very necessary that a decision should be arrived at, and that all the schools should subject their candidates to the same tests. That these tests should be of a more rigid character was, in his opinion, of the greatest import. They had now arrived at a momentous period of their existence, and the fact that an intending veterinary surgeon could read and write and was acquainted with the first few rules of arithmetic, was not sufficient. If they were to attain the position in society to which they were entitled as one of the learned professions, they must prove themselves men of liberal education. He advocated a more rigid examination for the diploma of the college, particularly as regarded practical experience. That it was not possible at present to compel every student to go for at least a year to a veterinary surgeon to learn practice before obtaining the diploma, was to be deplored. But something must be done. The students of to-day differed in many ways from the students of bygone days. Formerly a man served several years or practised before going in for his diploma ; now many of the students went direct to college from school, and others adopted the profession not for love of animals or because it presented an opening in life, and to grant a diploma to men who had no practical knowledge of their art was a cruelty. The time would come when practical knowledge would be insisted upon, and in his opinion the best time to obtain it would be after the student had passed his first examination, by which time he would have obtained an insight into the duties he would be likely to be called upon to perform. The President next referred to the subject of dispensing with the aid of medical men on the veterinary examining board, and said he fully believed there were men in the profession quite capable of examining on the required subjects. But they must not do things by halves. If they were to do without medical help on the examining board, they must also do without extra help on the teaching staff of their schools. This would necessitate a great change in the course of work at the schools to fit men not only to take the post of examiners, but also to fill the positions of professors at the schools in all the subjects.

Mr. GREAVES, after thanking the President for his excellent address, expressed his regret that the council had been unsuccessful in their application to Government for a grant, and said it had been determined to apply for another charter, and one special point which would be provided for would be the power to insist upon apprenticeship, which he thought would meet the approval of all present. (Hear, hear.)

Mr. BLAKEWAY said he felt very acutely upon a subject touched upon in the President's address, because he thought all such societies should have the power to discuss political matters, to enable their representatives to explain their views upon them to the council. It had been said that these societies were not formed for the discussion of political questions, but he quite disagreed with those who held that opinion, and who were now beginning to alter their opinion.

Mr. OLVER congratulated the President upon his able address, and remarked that there was a very strong feeling that the examiners should be confined to members of their own profession. (Hear, hear.) He was quite sure there were men well able to examine in their own ranks, and it would strengthen the hands of the council if they expressed their opinion in that sense.

Mr. TRIGGER also complimented the President on his address. He also was of opinion that the time had arrived for the veterinary profession to conduct its own examinations. They had men fully competent to do the work of examiners. He suggested that the various associations should pass resolutions expressing their views and wishes, and forward them to the Royal College of Surgeons.

Mr. GREAVES said the question of dispensing with outside help on the board of examiners had been brought before several of the associations, and resolutions were passed unanimously in favour of confining the examiners to their own profession. He had for many years had a strong opinion on the point, and the more he thought about it the more he was convinced that it was not necessary to go outside for help, when they had men like Pritchard, Cunningham, and Lambert in their ranks. He should make an earnest effort to carry this point. (Hear, hear.)

Mr. OLVER moved that the time had arrived when the examining board should be composed of veterinary surgeons; this was seconded by Mr. TRIGGER, and carried unanimously. It was also decided to send this resolution to the council.

Some discussion took place in reference to the President's circular, and Captain RUSSELL, advertising his method of castration, complained that his motives had been misrepresented and misunderstood. He had no desire to trench on the practice of any professional brother, for he was willing to instruct any of his brethren in the use of the instrument, but he was bound under a heavy penalty not to reveal the secret of the operation within five years.

In the discussion the general feeling of the meeting appeared to be in favour of exonerating the President from blame.

It was decided to hold the next meeting at Worcester.

Several morbid specimens were exhibited, and gave rise to an interesting discussion.

Votes of thanks to the President for his address, and the late President and Secretary, were passed, and the company adjourned for dinner.

ROBERT C. TRIGGER, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

(*Concluded from p.* 49).

Very striking were the results obtained by the prompt measures adopted in the suppression of Cattle Plague in 1866 and 1872, equally striking would be the results in the case of other zymoses if measures equally prompt were adopted on their first appearance. It may be said that I have had climate and other local circumstances in my favour, when I tell you that in no single outbreak of Glanders that has come under my notice in Edinburgh (where

I have had full control over the animals) have I failed in arresting the disease, with the loss in small studs of one or two, and in larger from one or two to three or four animals. The same thing may be said of Rabies, which was utterly stamped out of Edinburgh, by purely precautionary measures, in the course of a few months, although it had assumed very alarming proportions, and it would have been stamped out even earlier than it was had not the local authority been thrown off guard by a positive professional opinion being publicly expressed that the disease was Diphtheria. The destruction of local centres of affection, the placing of the soil in a state of unpreparedness, are doctrines I would advocate mainly in reference to the prophylactics of specific diseases. Their value is proved in our dealings with Pleuro-pneumonia, with Glanders, with Rabies, with Cattle Plague, aye ! even with Anthrax ; and it could be rendered equally conspicuous in our dealing with Tuberculosis if the Legislature could once be prevailed upon to grapple with it—every animal suffering from the malady, I again repeat, should be at once slaughtered, and, if necessary, the owner compensated for his loss, and every particle of contaminated flesh, offal, etc., destroyed ; and more especially should tuberculous milch cows be sought for in our dairies and immediately removed, and no bull with the slightest taint of Scrofula about him—either historically or actually—should be allowed to remain entire or even to live. Sooner or later not only Tuberculosis, but Anthrax and all allied diseases will have to be dealt with by the State, and the sooner it is done the better for the whole human race.

Finally, gentlemen, allow me, as an outcome of the remarks I have addressed to you, to draw your attention to one or two unpalatable facts connected with our profession. These are (1) the great neglect of a high scientific training in our educational curriculum, and (2) in a great measure a result of the first fact the low estimation in which we are held in scientific circles, and the insult we frequently have to suffer at the hands of members of the sister profession.

Up to a comparatively recent date—and, I believe, the first systematic class of the kind was carried on at my desire in the institution with which I am connected—no attempt was made in the colleges to teach morbid pathology in a systematic and practical manner ; and even now I do not think it is taught in all the schools. The result is that the number of practical *pathologists* in our profession is very limited indeed ; and I am not aware that any veterinary surgeon in Great Britain has done anything in this direction of universal importance.

It may, of course, be said that it is the place of the teachers to see to this, and that it is also to the benefit of individual students to take the matter in their own hands ; this is all very true, but the former have neither time nor means to devote to such studies, and those among the latter whose talents fit them for such a pursuit are usually in the same position. None of the schools are endowed or assisted in any way, directly or indirectly, consequently the teachers are obliged to do an immense amount of work from which, if they are to follow truly scientific studies, they should be relieved ; and there is not one single bursary offered for the encouragement of such studies amongst students or recent graduates. If we look at the sister profession we find that most of the teaching schools are in such a position as to enable them to place at least one teacher so much at ease, as that he may carry on scientific work without let or hindrance, and without any thought for the morrow, and in the case of students there are numerous bursaries, some large, some small, open for competition, and having for their object the assistance and encouragement of good men in extended scientific studies ; but when we look at home can we point to any extraneous aid or encouragement to either teacher or student in this direction? Not one

penny in the shape of grants to the former, or of bursaries to the latter, is forthcoming.

Gentlemen, depend upon it we shall never take our proper and our rightful stand alongside the other professions, until *some* at least of our graduates are trained to practical scientific work, and trained in such a manner as to enable them to hold up their heads with the best pathologists in the world. Some of our continental brethren have gained for themselves a name and a fame in this direction. What have we done? The best answer is to be silent.

Some there are amongst us who are anxious to secure an honourable abode for our college (all praise is due to them for their efforts), but I would ask if it were obtained, would it not be like the obtaining of a nutshell without its kernel? We must improve ourselves in another direction first, unless we are prepared for a repetition of such a gross insult as that recently offered to us by an Indian medical man, or unless we are content to see—as is now practically the case—our place taken on boards of scientific inquiry into the nature and origin of disease by members of the medical profession (and I would here observe that little as many of them esteem our scientific attainments they are not backward in competing for any emoluments our profession directly or indirectly offers), nor should we have them every now and then pretending to throw light on subjects about which we poor ignoramuses (according to their estimation) know nothing, but which are as familiar to us in all their bearings as is the nature of our every-day work and duties.

After a short discussion in which Messrs. W. J. Mulvey, D. Dudgeon, C. Stephenson, J. E. Peele, and W. Hunter took part,

Mr. D. DUDGEON proposed, and Mr. J. E. PEELE seconded, that the discussion be adjourned until the next meeting of the Association. This was agreed to, and the meeting terminated with a hearty vote of thanks to Professor Walley for his excellent paper, and a similar vote to the Chairman.

Subsequently the members and visitors sat down to the annual dinner, the President in the chair. On the removal of the cloth the usual loyal toasts were given and responded to. GEORGE ELPHICK, *Secretary.*

THE NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE usual half-yearly meeting of this Association was held at the Norfolk Hotel, Norwich, July 4th, 1882, Mr. J. D. Overed, Bedfield (President), in the chair.

Amongst the members present were Messrs. G. G. Whincop, Norwich; W. Shipley, Great Yarmouth; and J. Hammond, Bale (Vice-Presidents); A. H. Santy, Norwich; G. A. Banham, Cambridge; E. Barker, St. Faith's; W. J. Bower, East Rudham; H. Newson, Beccles; and R. T. Barcham, Edingthorpe.

Letters were received from several members regretting their unavoidable absence. Mr. Francis and other gentlemen were present as visitors.

The minutes of the last meeting having been read and confirmed, the PRESIDENT delivered an inaugural address, in which the principal matters affecting the interests of the profession were noticed, especial prominence being given to the Veterinary Medical Act of 1881, which he characterised as the most important measure of the age, and from which he anticipated the most satisfactory results, not only to veterinary surgeons, but to the public at large. To all who had assisted in passing the Act he offered his warmest thanks and gratitude, and especially to Mr. George Fleming, who, he was glad to find, had been re-elected President of the Royal College

of Veterinary Surgeons, a richly-merited compliment, and a graceful recognition of the valuable services rendered by him to the profession, of which he is so distinguished a member. The President (Mr. Overed) then congratulated Mr. Santy on his recent election to a seat in the Council, which he hoped would long be retained by that gentleman, to assist by every legitimate means the advancement of the interests of the profession, and to express the views of his professional brethren in this part of the kingdom. He concluded his remarks by requesting the continued assistance and support of the members during his term of office in the presidential chair, which he hoped would be marked by a large degree of prosperity to the Norfolk and Eastern Counties Veterinary Medical Association.

The subject of the "British National Veterinary Association" was then introduced and explained by Mr. BANHAM, when the following resolution was unanimously passed :—"That this meeting approves of the formation of a British National Veterinary Association, and that the President and Mr. J. Hammond be the representatives of the Norfolk and Eastern Counties Veterinary Medical Association on the general committee for the furtherance of that object."

An elaborate and instructive paper was next read by Mr. BANHAM on "Stringhalt," which gave rise to an interesting discussion, in which most of those present took part, a hearty vote of thanks being accorded to that gentleman, with the request that the paper be sent for insertion in the professional journals.

Interesting pathological specimens were introduced and explained by the President, by Mr. Santy, and Mr. Shipley.

There were also some modern veterinary instruments and appliances laid on the table for inspection, adding to the interest of the meeting, which concluded with the usual vote of thanks, and by the members taking tea.

J. D. OVERED, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held on June 28th, at the Blackfriars Hotel, Manchester, Mr. Alexander Lawson, President, in the chair.

Present—Messrs. Jno. Lawson, T. Greaves, P. Taylor, W. Woods, W. Dacre, T. Hopkin, S. Locke, E. Faulkner, T. Briggs, J. Bunnell, H. Fergusson, W. H. Bridge, — Darwell, E. L. Leach, J. W. Ingram, A. M. Michaelis, and J. B. Wolstenholme, members ; with Messrs. Nour, Kirkman, Wormald, and Duckworth, visitors.

The minutes of the last meeting were read and confirmed, and the Secretary laid upon the table the letters of excuse for non-attendance.

Mr. W. H. Bridge, of Bolton, was unanimously elected a member of the Association.

The SECRETARY read Mr. Banham's letter of June 2nd, in reference to the proposed National Veterinary Medical Association, and drew attention to the pamphlet thereon which he had forwarded to members.

After some discussion, Mr. WOODS proposed, and Mr. WOLSTENHOLME seconded, that Mr. T. Briggs, of Bury, be appointed to represent this Society in the formation committee, together with Mr. Greaves, who had been previously selected by the sub-committee appointed to consider the same.

The report of the Soirée Sub-Committee was then read, containing a draft scheme for the coming-of-age celebration ; and on the motion of Mr. WOODS, seconded by Mr. P. TAYLOR, the report was adopted, and the present committee authorized to arrange and complete the same.

The SECRETARY read a letter received from Mr. J. B. Martin, of Roches-

ter, referring to a testimonial that it was proposed to give to the President R.C.V.S. (George Fleming, Esq.), for his arduous services during the promotion and passing through Parliament of the Veterinary Surgeons Bill.

Mr. THOMAS GREAVES moved, and Mr. W. WOODS seconded, that "this Association warmly entertains the proposal that the profession do in some suitable manner recognise Mr. Fleming's services in the obtaining of the Veterinary Surgeons Bill, 1881." Carried unanimously.

Mr. WM. DACRE then read a most interesting paper on "Navicular-thritis;" it was eminently practical, and was illustrated with many specimens. A good discussion followed, and, in conclusion, the PRESIDENT proposed that best thanks be given to Mr. Dacre. This was seconded by Mr. GREAVES, and carried unanimously.

At about the time of the last meeting a Mrs. Keal, widow of a veterinary surgeon who had been in practice near Liverpool, made application to several of the members for pecuniary aid; a little was individually subscribed, and it was thought desirable that inquiry should be made as to the advisability of granting some assistance from the Association. To this end Mr. T. Hopkin was appointed, and he now reported that he had written Mrs. Keal for references, and that he had also communicated with the lady and gentleman named by Mrs. Keal; the replies they made he now placed before the members.

The meeting at once decided that it was not advisable to make any grant in the case.

Mr. WOLSTENHOLME exhibited a cysticercus cellulosæ which he had found in the cerebrum of a dog that had died in convulsions.

JNO. B. WOLSTENHOLME, *Hon. Sec.*

SCOTTISH CENTRAL VETERINARY ASSOCIATION.

THE adjourned quarterly meeting of this association was held at Crown Hotel, Dundee, June 27th, A. Spreull, Esq., in the chair, the following members, etc., being present:—Messrs. Constable, Inchture; Ritchie, Forfar; Johnstone, Perth; Hampton, Arbroath; Bissett, Brechin; Sandeman, junr., Kirriemuir; Fingzies, Lochgelly; Hunter, Dundee; Philp, St. Andrew's; Black, Lochee; Panton, Blairgowrie; and Clark, Coupar Angus, Secretary.

The following gentlemen sent letters of apology for absence:—Messrs. Knight, jun., Dunfermline; Lowe, Perth; and Reid, Auchtermuchty. The minutes of the previous meeting having been read by the secretary were confirmed. Mr. Panton, Blairgowrie, having been nominated for membership,

The CHAIRMAN then read a communication from Mr. RUTHERFORD, secretary, "Scottish Metropolitan Veterinary Medical Association," anent proposed co-operation with Edinburgh and Glasgow Associations for an annual meeting. After discussion by members, it was proposed by Mr. JOHNSTON and seconded by Mr. CONSTABLE, "That this society cordially agree to proposed arrangement. Carried unanimously.

The CHAIRMAN then called on Mr. CONSTABLE, Inchture, who read a carefully-prepared paper on "Strangles," dwelling more particularly on the contagious nature of the disease, and stated that his reason for choosing this subject was from having seen a case of Strangles affecting the human subject caused by inoculation, and having been favoured with the following notes on the case by his friend, Dr. Robertson Errol, through whose kindness he had the privilege of seeing the patient who was attacked:—

On 31st of May last year, I was sent for to see J. W. A., a farm overseer,

who complained of severe sore-throat and great difficulty in swallowing food, and even saliva. On examining my patient, I found the cervical and submaxillary glands greatly swollen, tonsils also very much enlarged and inflamed. Pulse from 110 to 120; skin very hot and dry, and the temperature must have been considerably high. I am sorry I am unable to state the exact temperature, as, unfortunately, I had broken my thermometer only a day or two before, and had not got another. This patient was a stout healthy man, about thirty years of age, who enjoyed general good health, and had no hereditary predisposition to scrofula or phthisis. I was, on that account, all the more surprised to find there was so much glandular swelling in so short a time, from what at first I supposed to be a simple cold. As his occupation sometimes led him to have a pretty smart spurt of work, and then after that to stand for some time in the open field while warm, I at once concluded the attack had been brought on by a chill. My treatment at first was simple enough : emollient poultices to the throat and neck, with five grains of calomel and fifteen of scammony to give him a good smart purge. On making my second visit, I learned that the bowels had been freely moved, and altogether he expressed himself much better. The skin was cooler, and the pulse reduced to about 80. The swelling of the tonsils also greatly reduced, but there was still a considerable *stiffness* about the head and nostrils, like what one feels when affected with cold in the head. I ordered the poultices to be continued, and for food new milk, *ad lib.*, which I was sure would nourish and yet not hurt the tender tonsils. On the third day I found my patient, with one exception, much improved. Glandular swelling considerably less; pulse also down, and general temperature lower. There was a considerable redness and swelling all over the nose, with great redness of the lining membrane, and an offensive catarrhal discharge not common to an ordinary running from the nostrils, attended with some pain.

Remembering how often great relief is obtained when the nose is stuffed with cold, by smearing it with warm olive oil, I ordered this to be done, and to apply a warm poultice over all.

On the fourth day I found my patient much improved, the nose excepted, which was still increasing in size, and there was a nasty offensive discharge from the nostrils quite different from anything I had seen from nasal catarrh in the human subject.

Knowing a little about Strangles in the horse, I made inquiry if he had been working about any diseased animal on the farm, and learned at once he was attending to a young horse his master had recently bought, which was very ill with Strangles, and that he had been applying the poultices to the animal and kept him clean. I also learned from his wife that he had a great habit of picking his nose, which at once gave me a clue to a correct diagnosis of the whole affair. I at once saw that this was a case of accidental inoculation from the horse, and when I told them so, strange to say, both the man and his wife had formed the same opinion. After this the man got a little alarmed at the case, but I allayed his fears by telling him that it would just run its course and then subside. So soon as I learned the true nature of the case, I gave him a mixture of the Iodide and Bromide of Potass., the Bromide to soothe the nervous irritation, and the Iodide to act on the glands and as a blood purifier. I am happy to say the medicine had a most beneficial effect, by soothing the nervous irritation and allaying swellings in the neck. The nose, however, still increased in size and redness, till it seemed as if it would burst. It continued so till the eighth or ninth day, and then began to subside and blacken, much as a child's arm after successful vaccination. In about a fortnight from the commencement of the case, the man was quite well save a little puffy redness on the nose, and which was gradually wearing away.

Such cases are surely not very common, for during twenty-one years' practice in such an agricultural district as the Carse of Gowrie, it is the only one I have met with. My patient's master, on learning the true nature of the case, was at first somewhat incredulous on the subject, till the whole matter—how the man had no doubt got it by scratching his nose, as was his custom, when his fingers had been dirty with the discharge from the nostrils of the diseased animal, and had thus been inoculated in the same way as the arm of a child by vaccination.

Although rare, such a case shows the great necessity of being careful in handling diseased animals on the part of those who have the management and care of them; for how easy it is with a scratch on the fingers to be impregnated with a nasty and loathsome disease. We have seen and had to treat hundreds of cases of Ringworm got from those in charge of cattle, but we never had a case of Strangles before; and yet it might have been worse, as Farcy is a much more dangerous disease when communicated to man, it being almost always fatal in the human subject.

The reading of this paper gave rise to an interesting and instructive discussion among the members. The Secretary proposed a hearty vote of thanks to Mr. Constable, which was seconded by the Chairman.

Mr. Johnstone, Perth, consented to read a paper at next meeting, which is to be held in Perth. J. CLARK, *Sec.*

GLASGOW VETERINARY COLLEGE.

THE summer session of this institution terminated on the 5th July, and on the 8th, 12th, and 15th, the oral examinations of the Royal College of Veterinary Surgeons were conducted within the museum of the College. The Board of Examiners included Professor Crum Brown, Professor Turner, Dr. Andrew Wilson, and Dr. Dunsmore, University, Edinburgh; Mr. George Fleming, F.R.C.V.S., London; Mr. Alexander Robinson, F.R.C.V.S., Greenock; Mr. B. Cartledge, F.R.C.V.S., Sheffield; Mr. J. Roalfe Cox, F.R.C.V.S., London; and Mr. Archd. Robinson, M.R.C.V.S., Greenock. The following gentlemen were also present as *ex officio* members:—Principal M'Call, F.R.C.V.S.; Professors Knox, A.M., M.B.; Cooke, F.C.S.; and Macqueen, M.R.C.V.S., Glasgow Veterinary College.

Twenty-seven students presented themselves for the first examination, and of this number twenty-three passed very creditably, viz.:—

Messrs. M'Conechy, Islay; M'Millan, Glasgow; Stewart, Paisley; Forbes, Glasgow; Green, Irvine; Gilmore, County Antrim; Edgar, Wigtown; Bennett, Oxford; Calderwood, Paisley; Macdonald, Argyll; Mackeand, Wigtown; Murdock, County Louth; Baird, Dumbarton; Dove, County Down; Malloch, Perth; Beevor, Nottingham; Huston, County Armagh; Smith, County Armagh; Leckie, Dumfries; Hart, County Down; Butcher, Salop; Jolly, Wigtown; and Kerr, Crosshill.

Seven students also presented themselves for the second examination, all of whom were successful in passing, viz.:—

Messrs. Larkin, County Louth; Ross, County Antrim; Weir, Argyll; M'Nair, Helensburgh; Scouler, Middle Kerse, Stirling; Frew, Glasgow; and M'Gregor, Stirling.

The following gentlemen obtained the membership diploma of the Royal College of Veterinary Surgeons:—

Mr. Joseph M. Magill, Hilltown, County Down; Mr. Robert J. Maguire, Pollokshields, Renfrewshire; Mr. William Wright, St. Quivox, Ayrshire.

Medals granted by the Highland and Agricultural Society of Scotland, Principal M'Call, and certificates of merit granted by the college, were awarded in the different branches of study as follows:—

Botany.—Silver medal (Highland and Agricultural Society of Scotland)—Mr. Andrew Stewart. First-class certificates—Messrs. Malloch, Bennett, Butcher, and Mackeand. Second-class certificates—Messrs. Huston and Dove.

Chemistry.—Silver medal (Highland and Agricultural Society of Scotland)—Mr. Alexander L. M'Millan. First-class certificates—Messrs. Stewart, Butcher, and Malloch. Second-class certificates—Messrs. Huston and Macdonald.

Materia Medica.—Silver medal (Highland and Agricultural Society of Scotland)—Mr. Andrew Stewart. First-class certificates—Messrs. Butcher, M'Millan, and M'Conechy. Second-class certificates—Messrs. Forbes, Leckie, Smith, and Edgar.

Prescription Writing (special prize).—Mr. Samuel M. M'Conechy.

Best Oral Examination on Botany, Chemistry, and Materia Medica.—Gold medal (Principal M'Call)—Mr. A. L. M'Millan.

At the close of the examinations, the President of the Royal College of Veterinary Surgeons (Mr. George Fleming) intimated that of the twenty-three students who passed the first examination, and the seven who passed the second, twelve had succeeded in gaining the honorary distinction of "great credit," viz. :—

Messrs. M'Millan, Stewart, Gilmore, Edgar, Bennett, Dove, Malloch, Huston, Butcher, Ross, M'Nair, Weir.

THE FITZWYGRAM PRIZES.

THE Examination for these Prizes took place in London, the written part commenced on the 10th May, and the Practical on the 19th June, and was open to graduates of the R.C.V.S. who obtained their diplomas since the last competition, and who passed with "great credit," or "very great credit."

Mr. W. B. Walters, of Aldershot, and Mr. R. Rutherford of Edinburgh, were appointed the examiners. Only two candidates, Messrs. Sumner and Barrett, competed, both being from the Royal Veterinary College. The result was that Mr. H. Sumner gained the first prize, £50, and Mr. W. F. Barrett the second prize, £30.

Notes and News.

PROTRACTED INCUBATION OF HYDROPHOBIA.—The great frequency of Rabies in the South of England is attracting much attention, and the occurrence of cases of Hydrophobia is causing much alarm. One of these cases is remarkable for the long period of latency that ensued after the person was wounded by the rabid dog. Thirteen months ago, William Mills was bitten by a dog in Walmer Road, Plumstead. The wound was cauterised and soon healed. A few days afterwards the dog was destroyed, and the circumstance passed out of mind, the man continuing at his work in the shell foundry of the Royal Arsenal at Woolwich, apparently in good health. On May 12th he complained of pains, and on the 14th he showed symptoms of Hydrophobia, all the worst features of which painful disorder were rapidly developed, and the man died in dreadful convulsions. He was a married man, about forty-eight years of age, and had been twenty-seven years employed in Woolwich Arsenal.

EHRLICH'S METHOD OF STAINING TUBERCLE-BACILLI.—This method is a great improvement over Koch's original method, in that the bacilli are

much more brilliantly stained and easily found ; and it also takes a much shorter time, the whole process requiring only from half an hour to an hour. Ehrlich has employed it chiefly in the examination of sputa ; and it has now been adopted by Dr. Koch, in preference to his own method. The sputum is spread in a thin layer on a cover glass, and dried. In order to fix the albumen, the cover glasses are kept at a temperature of 100° to 110° Cent. (212° to 230° Fahr.) for an hour ; or, in practice, it is sufficient to pass them three or four times through a gas flame. The staining solution is prepared as follows. About five cubic centimètres of pure aniline are added to 100 cubic centimetres of distilled water, well shaken, and then filtered through a moistened filter. To this mixture, a saturated alcoholic solution of fuchsine, methyl-violet, or gentian-voilet, is added till precipitation commences. The cover-glass is allowed to float on this, with the side on which the sputum has been spread directed downwards, for a quarter to half an hour. It is then washed for a few seconds in a strong solution of nitric acid (one part of commercial nitric acid to two parts of distilled water), and afterwards in distilled water. In this way, the stain is extracted from everything but the tubercle-bacilli. The ground substance may be stained brown (if the bacilli have been stained violet), or blue (if the bacilli have been stained red), by way of contrast to the bacilli. It is interesting to hear that, in Berlin, the examination of sputum for these bacilli is now generally employed, as a means of diagnosing tuberculous affections of the lung from others : for the bacilli are constantly present in the sputa in cases of tubercle.

INOCULATION OF LEPROSY.—A recent number of Virchow's *Archiv* (vol. lxxxviii., 1882) contains an account, by Professor Köbner of Berlin, of attempts to inoculate Leprosy on animals. Although the results were negative, the experiments are of considerable interest. Professor Köbner confirms fully the observations of Hansen, Neisser, and others, in reference to the bacillus of Leprosy. He not only found the organism in fresh juice from the tubercles, but found it in preparations which had been many years in alcohol, and still more easily in dried portions of Leprosy-tissue which had been kept folded in paper for an equally long time ; so much so, that he recommends travellers in countries in which Leprosy is common to preserve the tissues in a dried state, in so far as they wish to keep them for subsequent examination in reference to the bacillus. A tubercle was excised from the thigh of a patient, a German, of healthy family, who had contracted the disease during an eleven years' residence in Pernambuco. Inoculations with the juice, and with small portions of the excised tissue were made on a monkey, two guinea-pigs, two young rats, a white mouse, two rabbits, a pigeon, three eels, a mud fish, and a frog. The monkey died 126 days afterwards of Tuberculosis, but no Leprosy-tissue was found, any more than in any other of the inoculated animals. One of the rabbits died on the fifty-sixth day, the other was killed after five months and a half. The inoculations in the case of those animals had been made by inserting small pieces of Leprosy-tissue into the anterior chamber of the eye. Those portions of tissue remained visible, and gave rise to no inflammatory symptoms. After being fifty-six days immersed in aqueous humour the Leprosy bacilli were well preserved and easily demonstrated, but they had not grown into the tissues of the iris or cornea. In preparations of dried blood, prepared by Ehrlich's method, Professor Kobner demonstrated that the bacilli are present in the circulating fluid. So far from considering the results of his negative experiments as conclusive, Professor Kobner refers to the time that elapsed before Tuberculosis, Recurrent Fever, and Septicæmia were successfully inoculated on animals. Further experiments of the kind are certainly desirable, and the attention of medical men practising in countries in which Leprosy is common may be advantageously directed to this question.

SPRATTS DOG BISCUIT.—We understand that "Spratts Patent," in addition to feeding the dogs at the Kennel Club Alexandra Palace Show in June, was also entrusted with the benching of the exhibits. This firm will also supply the benches, pens, and food for the forthcoming Royal Cornwall Dog and Poultry Show.

NARROW ESCAPE.—Prof. James Law, F.R.C.V.S., of Cornell University, Ithaca, N.Y., had a narrow escape from death recently. By mistake he took a six-grain dose of morphine in place of quinine, and administered the same deadly dose to his daughter, who was also ailing. As soon as the symptoms began to appear the facts flashed upon his mind, and by the aid of the telephone prompt assistance was summoned, and the two lives were saved. We congratulate the stock-breeding interests of America upon Prof. Law's escape from this peril. His death just now would have been a national calamity, as we have no man amongst us qualified by nature, education, and habits of mind to take up the work which he now has in hand, and in which he has already done such signal service. May his days of usefulness be yet long in the land.

Correspondence, etc.

ARMY VETERINARY DEPARTMENT.

DEAR MR. EDITOR,—Now that we Army Veterinary Surgeons are departmental and have got a roster, I hope we shall see the reliefs carried out with as much regularity as in the Army Medical Department, notwithstanding the hitches which, I am informed, exist. If it is considered to be for the good of the service to form us into a department, and lay down a regular and specified tour of foreign service, surely nothing ought to be allowed to mar the working of the whole machine.

It is true, I believe, that there are officers in the Department at home who prefer home to foreign service, and I consider they would act foolishly did they come out here one day sooner than they can help. But then we out here would like a change *occasionally*, and who could blame us? But then all parties can't be pleased, and so we remain.

Did this Indian Government treat us decently, probably some would be easily induced to prolong their tour of service in the country; but unfortunately we get what is called "consolidated pay," which bars all allowances, and out of it one has frequently (under the present district system—only yet in its infancy) to spend a trifle in travelling on duty at the public expense, so called.

I have got charge of one of these districts, and the outlay incurred in travelling brings my present pay—rupees 401 per mensem (after five years' service)—down to less than I drew when I came to the country under five years' service.

This is not encouraging, and, moreover, we seem to be at the beck and call of every commissariat officer in the district. When called upon to travel on duty at home, one is treated like an officer and gentleman, but out here I have known a pay examiner to cut a gharry (cab) fare to the amount of about sixpence, because it was that much more than what had been charged over the same distance on a previous journey, although a certificate on honour was signed to the effect that these expenses had been actually incurred.

Another word about the district system, and that is, that I view it with the utmost abhorrence, for an officer in a large district will have no fixed home; he will have to visit every part of his charge at least once every

two months, I presume ; will have to instruct the men in the forge, as well as write a long report, and in urgent cases—there's the rub !—will have to proceed forthwith, no matter what he may like or dislike to the contrary.

In less than ten effective months I had six or seven of these urgent calls to one battery. Fancy being in a place like Lucknow, with about five such outlying stations. No ! this is not the country for the district system, for I have not the slightest doubt but that nature, which is so adverse to Europeans out here, would run them in for by far the largest portion of their work just in the hottest weather ; and where life is reduced to a bare existence in an enormous house, one can guess what it would be in a small railway carriage.

Perhaps I am a false prophet, but I venture to say that four out of every six men of an Indian Department working such a system, would either become a prey to climate, or leave the service disgusted, and perhaps with shattered health.

As for privilege-leave, there would be no such thing under such a *regime*, for with the numbers we have at present, it is a mighty scarce commodity.

One very glaring evil in travelling about so much, as the system must entail, will be not only the great inconvenience resulting therefrom, but the rent of the various rest-houses, better understood as "Travellers' Bungalows" or "Dâk Bungalows," and which cost a rupee per diem, exclusive of the extra cost of living and for servants, and does not ensure fixity of tenure ; for one can be turned out after twenty-four hours' occupation, if one's rooms are required by any one else. In fact, I have studied this rolling-stone system, as it appears to me it must work, and have failed to discover a single redeeming feature in it. A slight increase of pay will be offered in case an Indian Department is formed to work it, but it will be all swamped, as shown above, unless a *very* liberal travelling and lodging allowance is given.

I notice in a short note from a cavalry officer of great experience in the last *Army and Navy Gazette*, that Army Veterinary Department men are being promoted for services in the field, and most sincerely hope he is not chaffing, for, barring Messrs. Clayton and Woods, I have heard of nobody else who was *actually* on service having got anything, although this would be a very good channel through which to do a little for a department the members of which received no honours, though their duties were *most arduous*.

I am anxiously waiting to hear the outcome of the Secretary of State's "looking into our case during last Parliamentary recess." Apologizing for thus far trespassing on your valuable space,—I remain, yours sincerely,

"HOPEFUL."

CLAUSE FIFTEEN OF THE VETERINARY SURGEONS BILL.

SIR,—Some veterinary surgeons besides myself, possibly, have been disappointed lately at not finding some information in the veterinary journals respecting the practical working of the above clause in that Bill which has been secured for us by one of our very best friends.

Probably my apprehensions are groundless, and those in command of our interests may compare me to a passenger on board ship needlessly inquiring of the officers whether there are any rocks about. However, to be as short as possible, I will remark that I am daily becoming more convinced that the work of discriminating between the worthy and unworthy among the applicants for registration is one of extreme delicacy and difficulty, and I will give one case out of many I could relate to illustrate my meaning.

Many years ago a veterinary surgeon (Mr. H. Rickard) was practising in this town, and also kept a forge, at which at various times there worked

men called Ed. Seccomb, Rd. Bennett, Wm. Roberts, and John Rodda, and it is as true as it is amusing that as these men left their situations they every one practised as a V.S.

The first-named (always known as "Navvy Jack") was employed (when out of jail) by many of the surrounding farmers. Well, Navvy Jack is dead.

The second carried on a general smith's business, and over his door is a large board, with the words, "Smith and Cattle Doctor." This aspirant is also dead; but the business is continued by his son, a young man, and the degrading signboard still occupies its prominent position, as if its object were to maintain the homology of farriery and veterinary surgery.

The third has for many years been employed as general manager and veterinary surgeon by a firm of millers and merchants here, and still continues in that capacity; but he is sufficiently intelligent to know his weakness, and frequently seeks my assistance.

Now, as regards the last of the quartette, he has also carried on business as a general smith for many years, but does not confine himself entirely to his legitimate work, for, possessing the proverbial quack doctor's tongue, many men have been found willing to pay double for having their horses blemished for life.

Such characters as these need not occasion any alarm while occupying their present position, but if such men can, by strategy, secure registration, the question for our consideration will then be, Does our Act of Parliament raise us by lowering quacks, or does it lower us by raising quacks? And now, as an apology for these remarks, I must state that this last-named blacksmith is seeking registration, and goes about with a piece of paper, boasting that it is a letter from London about his joining the College. Reference was made in a recent veterinary journal to a cabman (who has been with a veterinary surgeon) making his application. If a veterinary surgeon's smith considers he has a chance of registration, why not his groom? for both could find plenty of sentimental sympathisers to provide them with testimonials. I will only further remark that I feel that the next few months must either tend to remove us from or connect us with a most unenviable class of men, and repeat that I apprehend our worthy Council have before them a task as unthankful as it is difficult.

Yours, etc.,

Penzance, Cornwall. J. STEPHENS, M.R.C.V.S.

[The Registration Committee has commenced its onerous task, and the names of the unqualified practitioners selected for registration under the Act will, in all probability, be placed before the members of the profession before final approval, in order that the list may be carefully scrutinised. The penal operation of the Act does not commence until 1884; so there is plenty of time for deliberation.]

NEW REMEDIES.

DEAR SIR,—We beg to thank "Pharmacon" for his fairness in stating that the Tonic Mixture he examined and reported on in the May number of the VETERINARY JOURNAL was not the Mist. Quinquiniæ Comp., designated by Mr. Maynard the "Tonic of the Future;" and as "Pharmacon" makes no comment as to its qualitative composition, we conclude that he found our preparation *what it professes to be.*

As regards the label, we think it should be explained that *two* have been issued, one a very long time since, and the other early this year. The old label appears to have been upon the bottle referred to by "Pharmacon," whilst the new one is alluded to by Mr. Maynard. We must therefore ask

"Pharmacon" and your readers to acquit Mr. Maynard of any intention of misquoting facts.

As to quinquinine being therapeutically of greater value than quinine, the assertion is borne out by the medical profession (as stated in our advertisements in the VETERINARY JOURNAL), amongst whom we may mention Dr. Lauder Brunton in England, and M. Froloff in Russia; and further state that in the malarious districts round Faversham, Strood, and Rochester, and in Romney Marsh, the quinquinine is used in very much larger proportion than quinine.

If we might be allowed to comment upon "Pharmacon's" remarks as to our being conversant with Mr. Maynard's article before its publication, we would say that the writing of it was quite a spontaneous act on the part of Mr. Maynard; but our representative, Mr. Huish, being at Romsey a few days before he was at Liverpool, on March 13th, it was quite natural that he should hear of its being about to be sent to the Journal for publication.—Yours obediently,

MACKEY, MACKEY AND CO.

DEAR SIR,—I should not have troubled you with another letter on the above subject, had not "Pharmakon" in the current number of the Journal made statements absolutely untrue and wilfully false.

Referring to my article on "The Tonic of the Future," he makes me say that I had *cured* a case of Pyæmia in six hours by administering the quinquinine mixture.

What I really said was that "the patient was *seen* six hours after the medicine had been given, was chewing the cud, appeared comfortable, and made a *rapid* recovery."

A man who, to point his own argument and suit his own ends, deliberately misquotes to the degree of making the word "rapid" equivalent to "six hours" must wilfully make the substitution, and is not to be tolerated as a fair critic.

In his first letter "Pharmakon" was good enough to insinuate that my cases existed only in imagination; in my reply I gave him the name and address of the owner of the St. Bernard pup; and he now goes out of his way to say that my doing so adds "very little to the history or interest of the case." Perhaps it does not; but it goes to prove the case was not a fictitious one, much as "Pharmakon" may try to ignore the fact.

I could also furnish "chapter and verse" for the other cases, but as one has produced so little satisfaction to "Pharmakon," it would be useless to do so. "Pharmakon's" other mis-statement has reference to the quantitative composition of the Mist. Quinquin. Co. being absent from the label.

Here is the copy as it appears on the bottle now before me, and on a similar one when I wrote the article in question:—Formula—Quinquinine grs. xvj.; Tinct. nuc. Vomica, ʒij.; Liq. Ferri Dialys Conc., ʒj.

As to proving my statement that quinquinine is a better therapeutic agent than quinine, I can do so by assuring "Pharmakon" that before the advent of the compound preparation I used quinquinine alone, and found better results from it than from quinine, the former being more easily assimilated, and often proved itself tonic where quinine, or bark, had not.

In conclusion, I would say that the mixture has been used very often since I wrote the article, with the best possible results, and it will ever find a place in my pharmacy.

I did not draw attention to the mis-spelling of "Pharmakon's" *nom de plume* with the idea of cavilling at it, but on reading his letter a faint suspicion came over me that your correspondent was possessed of no small

amount of self-importance, and more than a *trace* of vanity concerning the cleverness of his writing.

With these impressions upon me, I thought it would be just as well to pull him up over the "*καππα*" in "*φαρμακον*," and with all due deference to his superior (?) learning, I beg to say I fail to be convinced of the propriety of spelling the word with a "*c*."

The *English* words so spelt may be counted upon the fingers and thumb of one hand by adding one, and in neither of the six occurs the word "pharmacon."

Yours very truly,

WM. MAYNARD, JUN., M.R.C.V.S.

THE EXAMINATIONS.

SIR,—I desire to protest against the system of allowing students who have been rejected to pass afterwards with "great credit." Surely there is something anomalous about such an arrangement, and I submit that it is very unfair to honest students, who have gone through "on the square" and achieved distinction, that others who have had much more time should be equally distinguished.

It must detract seriously from the lustre of a certificate of merit that idle and dissipated, though in many cases able, students, who, alas! are only too numerous, and who, to quote the late Professor Spooner, "contaminate the very air of the College," should be allowed to obtain the same document by simply "pulling themselves together" when they think they will, after leading astray many promising young men.

I am, sir, yours truly,

"RECTUS."

Communications, Books, Journals, etc., Received.

Communications have been received from G. A. Banham, Cambridge; R. C. Trigger, Newcastle; J. Ferris, A.V.D., Athlone; G. Evans, A.V.D., Madras; H. Peele, West Hartlepool; A. W. Hill, London; J. Stephens, Penzance; "Rectus"; J. B. Wolstenholme, Manchester; M. Treacy, Indianopolis, U.S.A.; "Hopeful"; R. Paterson, Downham Market; R. W. Burke, A.V.D., Limerick; W. Maynard, Romsey; Mackey, Mackey, and Co., London; J. Clark, Coupar Augus; A. Broad, London; J. D. Overed, Blofield; W. Shipley, Great Yarmouth; E. A. Drew, Oldham; J. McCall, Glasgow.

BOOKS AND PAMPHLETS: *M. H. Hayes*, Riding on the Flat and Across Country; *A. Gotti*, Inoculazione preventiva del Carbonchio e Vaccinazione Carbonchiosa di Pasteur; *J. M. Ostertag*, Anleitung zur Erkennung und Beurtheilung der Schafräude; *G. T. Leisering und H. M. Hartmann*, Der Fuss des Pferdes in Rücksicht auf Bau, Verrichtungen und Hufbeschlag; Bulletin de la Société Centrale de Médecine Vétérinaire; Transactions of the Epidemiological Society of London; Proceedings of the Medical Society of the County of Kings.

JOURNALS, ETC.: *Stockbreeders' Gazette; The Squire; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Revue Vétérinaire; Annales de Méd. Vétérinaire; Deutsche Zeitschrift für Thiermedicine und Vergleichende Pathologie; Recueil de Méd. Vétérinaire; l'Echo Vétérinaire; Archives Vétérinaire; Journal de Méd. Vétérinaire et de Zootechnie; Lancet; Field; Irish Farmers' Gazette; Land and Water; Wochenschrift für Thierheilkunde; American Live Stock Journal; Medical Press and Circular; Live Stock Journal; Agricultural Gazette; Mark Lane Express; British Medical Journal; American Veterinary Review; La Clinica Veterinaria; Der Thierarzt; La Presse Vétérinaire.*

NEWSPAPERS: *Daily Chronicle; Irish Times; Toronto Globe; Le Nouvelliste de Seine-et-Marne; Montreal Gazette; Freeman's Journal; Sport; Glasgow Citizen; Glasgow Herald; Scotsman.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

SEPTEMBER, 1882.

EXTREME HYPERTROPHY AND RUPTURE OF THE SPLEEN.

BY W. WOQDS, F.R.C.V.S., WIGAN.

I HAVE forwarded to the Brown Institute a spleen which, so far as weight is concerned, is to me a perfectly unique specimen, as, when removed from the carcase, it weighed no less than 131 lbs.

There is little history attached to the case. It was that of a mare, apparently in good health, with no external manifestations about the abdomen of the immense tumour contained therein, and to see her I was hurriedly called a few days ago. I found upon examination that she was dying, with well-marked symptoms of internal hæmorrhage. She died during the course of the day. A *post-mortem* examination revealed the spleen now forwarded, in which was a rupture about two inches in length, and from which the mare had bled to death. I may mention that, for some weeks previously, the mare had been suffering from occasional slight hæmorrhage from the vagina, which was attributed by the owner to some injury having been inflicted by the entire horse during the service of the mare, some two months previously; with this exception, she has apparently enjoyed good health, particularly for the last six months. From a cursory examination, the chief change in the spleen seems to be a great increase both in the relative and absolute amount of connective tissue.

[Examination of sections of this spleen revealed nothing except simple hypertrophy of its tissue. The organ in this instance must be pronounced the heaviest on record, as a careful search through home and foreign veterinary literature does not afford a parallel case. Hering gives an instance, which he considers extraordinary, in which the spleen weighed 62½ lbs., the horse, during life, offering no indications of ill-health; and Gurlt describes another case in which the spleen weighed 37 lbs. The average weight of the normal spleen is about 32 ounces. This may, therefore, be pronounced the most extraordinary case of Splenic Hypertrophy ever reported. Even when cut up into pieces for facility in weighing, on arrival at the Brown Institution, it weighed 126 lbs.

With regard to symptoms, it is very probable that a careful examination made during life, had there been any reason to suspect such a condition, would have discovered distention in the left hypochondriac region, and dulness on percussion. In recorded cases of Splenic Congestion, accompanied by hypertrophy of its tissue, hæmaturia, enterorrhagia, and epistaxis have been sometimes noted.]

SEVERE INJURY TO THE CORONET CAUSING EXTENSIVE EXOSTOSIS AND ANCHYLOSIS.

BY JOHN FERRIS, F.R.C.V.S., A.V.D., ATHLONE.

Case 17, *H Batt., 2nd Brigade, R.A., Black Gelding, aged* 12.

December 15th, 1881. Contusion off hind foot, the coronary substance is very painful on being touched, the leg is swollen, and the animal is too lame to walk. The cause of the injury cannot be satisfactorily accounted for. Give bran diet, remove the shoe, and well foment the injured part.

16th. Worse: the leg is more swollen, the animal is continually lifting up the foot in great pain. Foment constantly during the day.

17th. The horse is suffering severely from irritative fever, pulse 67, respiration 29. Give Pot. Nit. ʒij in water to drink.

18th. There is considerable swelling round the coronet, and

the pain is still severe, pulse 69, respiration 31. The animal lies down frequently, and feeds a little on bran mashes, but eats very little hay ; the abdomen is a good deal contracted.

19th. No improvement, continue the fomentations.

20th. No relief, pulse 69, respiration 27, mouth very hot ; there is evidently an abscess forming on the outside of the coronet.

21st. No improvement, pulse 68, respiration 25.

22nd. The abscess has burst, and there is a free discharge of matter. Keep the foot in a bucket of hot water.

23rd. No relief, matter still flowing.

24th. No improvement, pulse 69, respiration 27.

25th. Less constitutional disturbance, pulse 61, respiration 23 ; the horse lies down a good deal during the day ; give a few scalded oats with the bran mashes.

26th. The swelling extends all round the coronet, and the leg is still swollen : the pain continues acute.

27th. Pain unabated, pulse 63, considerable discharge from the wound, chiefly matter mixed with blood. Encourage the discharge with fomentations.

28th. Slight improvement though the wound is not looking healthy.

29th. Improving, in less pain.

30th. Feeds better, wound looks healthier.

31st. Pulse normal. The horse has fallen away considerably in condition.

January 1st. Relapse ; pulse 68, pain much increased. Give Pot. Nit. ʒij in water to drink.

2nd. No improvement, continue to keep the foot in a bucket of hot water, and give more scalded oats.

3rd. No improvement, lies down longer at a time.

4th. Placed the animal in slings. The irritative fever increasing, pulse 79, respiration 27, unable to bear any weight on the leg.

5th. No improvement, pulse 78, respiration 25.

6th. The horse rests himself fairly well in the slings, but there is no improvement. Apply flannel bandages to the coronet and leg, keep the parts wet with hot water during the day.

5 p.m. There is a synovial fluid mixed with blood flowing freely from the wound, the animal is in intense pain: the joint has evidently been extensively injured. Pulse 71, respiration 23.

7th. About the same; give oats during the day, and bran at night; the horse is in very low condition.

5 p.m. The animal stands in the slings on three legs, and will not rest himself in them properly.

8th. Much worse, prognosis unfavourable, pulse 84, respiration 27, irritative fever much increased, profuse discharge from the wound. On removing the animal from the slings he fell down quite prostrated.

2 p.m. No relief, lies down quietly.

5 p.m. Slight improvement, continue fomentations throughout the night, pulse 81, respiration 27.

9th. Pulse 75, respiration 24; feeds a little; give dry bran instead of mashes, as he eats it better, give also a few carrots. The system has suffered severely from the irritative fever, and there is great prostration.

4 p.m. Pulse 73, respiration 18, less fever, unhealthy discharge from the wound.

10th. Less constitutional disturbance, pulse 72, respiration 21. Give change of food, dry corn and good hay; lies down frequently, and remains quiet when down.

11th. Constantly twitching up the foot when standing; pulse 70, respiration 23.

4.30 p.m. About the same, feeds better.

12th. Slight improvement, pulse 66, respiration 20, not so much discharge from the wound.

4.50 p.m. Pulse 63, respiration 23.

13th. About the same, pulse 65, respiration 22.

4.20 p.m. No change for the better, irritative fever continued, pulse 67, respiration 25.

14th. The animal is much emaciated, give extra food, both corn and bran.

5 p.m. Feeds better. The leg is less swelled.

15th. Pulse 68, respiration 25.

5.20 p.m. The horse is still in great pain.

16th. No relief, pulse 67, respiration 23.

5 p.m. About the same, feeds fairly well.

17th. Pulse 61, respiration 22.

5 p.m. No improvement generally, but the wound looks more healthy, and there is very little discharge from it.

18th. Pulse 58, respiration 17.

5 p.m. Slight improvement.

19th. Improving slowly, pulse 54, respiration 18, feeds better, the wound appears healthy.

20th. Keeps the foot in the bucket of hot water of his own accord.

21st. Puts a little weight on the leg.

22nd. Abdomen less contracted, feeding better, and the foot less painful.

23rd. Pulse 57, respiration 19, the hot water affords great relief.

24th. Improving steadily, pain decreased, the swelling subsiding, pulse 51 only.

25th. Wound fast healing. The horse puts a good deal of weight on the foot, and walks with some difficulty.

26th. The irritative fever has reduced the animal to a skeleton; if he had not fed fairly well, he could never have borne up against it. Give bran and corn diet.

27th. The seat of the injury extends all round the coronet, and the joint is extensively implicated.

28th. There is still considerable enlargement and inflammation in the parts.

29th. The inflammation is subsiding.

30th. The swelling is decreasing, the condition is improving.

31st. The wound has healed, there is much swelling round the coronet which is partly osseous.

February 1st. There is an exostosis on the coronet about the size of a large ringbone, there is also anchylosis of the joint. Hot applications afford relief.

15th. There is still sub-acute inflammation going on in the parts.

27th. The joint is less stiff, and there is less heat in the parts. Give about a quarter of an hour's exercise daily at a very slow pace, and apply bran poultices during the day.

March 11th. Absorption has diminished the osseous deposits. Increase exercise to half an hour daily.

17th. Walks better, though still very stiff.

27th. Slight improvement. Give half an hour's exercise morning and evening.

May 16th. The exercise and the poultices have constituted the principal treatment since the 27th February; there is now a marked improvement, the horse can walk and trot practically sound. Increase exercise to an hour morning and evening.

31st. The exostosis has decreased. It will appear that mechanical action in the joint, brought about by gentle exercise, accelerated the absorption, while the poultices soothed the changes occurring in the tissue elements of the inflamed parts.

June 27th. The horse is going sound, and doing his duty as well as he did before the injury.

BASES OF CONTAGION OF SPECIFIC DISEASE—PRINCIPLES OF PREVENTION.

BY RICHARD W. BURKE, M.R.C.V.S., A.V.D., LIMERICK, IRELAND.

IT is not too much to say, I think, that in the interpretation of the phrase "spontaneous generation" which at present obtains, quite as much as in its right application, the one thing conspicuous is the chaotic confusion of the conceptions of it by various persons. And as it is not in the nature of things that we should all agree in holding the same opinions deduced from a consideration of certain *data*, it is my determination to look to these latter alone, and to allow them to speak for themselves. Questions of great scientific moment were never yet settled by the acceptance of the extreme views of some one great authority in opposition to those of another, and *vice versâ*, but by each man placing before himself the facts, and thus deciding the respective merits of the *dicta* of contentions of disputants, as well as forming for himself original views of the matters in issue. The mere opinion of one authority is no more a guarantee of its genuineness to the student of pathological science, than is the stamp of the Bank of England a sufficient warranty to those who may attempt to

utter its notes. And the entire subject is so involved in the mists of uncertainty, that the sun of science must needs pour his fiercest rays on it if it be desired to dispel these noxious exhalations. "Non enim tam auctoritatis in disputando, quam rationis momenta quærenda sunt." Still, a great many are afraid to question what others who speak as having authority declare to be right. And so we at present find that, however hollow and unsupported a theory, provided it is only backed up by some so-called authority, it is destined to be extolled by a no narrow section of our unthinking community, and we have a contest in which truth can be victorious only by accident.

We are never so likely to settle a question rightly as when we discuss it freely. We are most likely to form just opinions when we have no other wish than to know the truth, and are exempt from all influence, either of precept, prejudice, or preconception. Theory must be approved or condemned according as its effects in their application to practice shall appear to be justifiable or not. But the difference between rules drawn from practice and rules deduced *à priori* has, from the first, been variously represented, but never more than in the course of recent discussions. We shall therefore make no apology for devoting a brief consideration to the discussion of this interesting and most important question.

The question of spontaneous generation of a *case* of disease has merged, we know not how, into that of the spontaneous generation of the *seed* of disease—and this makes a difference that cannot be too clearly borne in view. The germs of disease assuredly exist at all times and in all places, though their numbers are determined by the conditions surrounding them, namely, those of *climate*, *soil*, and *hygiene*. Hence we find that Rabies is seldom to be met with in Ireland, while cases of Cattle Plague are equally as rare in England, and belong more properly to Russia, India, and other countries. So also the ova of reptiles refuse to select Ireland for a "happy hunting ground"; while the palm-tree is not met with in the colder northern hemisphere, except it be in hot-houses.

The recent resumption of the subject of the origin of specific disease from two opposed platforms, shows to demonstration the

desire of opponents of the middle course of things to live henceforth. But theory and practice have alike taught us the utter impossibility of the success of vain endeavours to draw a hard and fast line of demarcation in the study of disease, and those who persistently continue to pose either as ultra-spontaneists or ultra-contagionists must finally lose the scanty foothold of toleration they now enjoy, and, from ever leaning at one time to this side and at another to the side opposite, they will in the end prove but poor representatives of either. They will misunderstand the position of others generally, and their own in particular.

One respectable enthusiast and seeker after truth, in a paper which he lately contributed towards this subject, from which I happened to gather but little that was new to the profession, assured me that the number of *amateur* ovarists (followers of the "micrococcus theory" of specific disease) was at this time immense; and that the difficulty of distinguishing these persons, to whom love for mere theory had rendered the study necessary, from such as were pursuing it with a view to practice, occasioned him mental trouble, and aroused within him the most burning indignation! This invidious commentary, considered in its application to its author, is neither tolerant nor argumentative.

Without taking it upon ourselves to express any opinion on those who take up the above anomalous position, we will content ourselves with just mentioning that two at least of the senior professors * of our schools have refused to lend their countenance to either of these doctrines, when expressed in regard to the mode of inception of specific disease. There can be no question that this refusal to recognize a controversy that is seemingly as interminable as it undoubtedly is absurd, will not be without its salutary effect, while it has resulted in a tolerably satisfactory solution of a difficulty that had nothing of the practical in it, and the endurance of which has not succeeded in effecting that saving to the country it was promised to do. And I am prepared to substantiate what I assert. I would ask, What has the exclusive contagionist, for example, done in regard to epizoöties of

* We allude to Professors Williams and McCall.

Cattle Plague, say, when considered from the point of view of indigenous disease? With all the precautions for the prevention of contagion that have been taken, the disease has nevertheless mocked their efforts and snatched its prey, while it has desolated every part of the country, or a certain radius thereof, *simultaneously, and not by a gradual process of contagion from animal to animal being effected.* And the same may be said of all kindred maladies. I repeat, that if this matter be not duly considered, or if it be evaded, the natural result must be, that instead of the unity, we must inevitably witness the total separation of two bodies that now needlessly oppose each other.

A large amount of imagination, it will readily be seen, is not requisite to recognise the fact that disease germs must have co-existed with other germs higher in the scale of existence, such as those of parasitic germs, whose life-history is distinctly traceable, as well as those of creatures higher still, and that these existences must have begun simultaneously. Of course, knowing as we do that we can find many varied maladies, each of which is due to an unique species of germs, it follows naturally that there must be as many species as diseases. And in the face of these facts there is yet an absurd contention that the existence of disease in one animal is distinctly traceable to contagion from one antecedently affected, *as if it was impossible that the first animal sufferer should not itself have been made the primary habitat of the germs.* In those cases, again, where they have been unable to trace the source of the antecedent contagion, they invariably fall back upon the only mainstay that remains to them, and attribute the malady to spontaneous generation of germs, that is, to the springing into life of germs from inert matter! And considering the knowledge that these germs do exist, and do attach themselves primarily to animals, is it not incomprehensible that when the source of contagion cannot be traced the malady should be placed to the account of germs *de novo?* In the case of any disease, the animal suffering from it may have received it *de novo*, but, at the same time, that is no proof that the germ itself is generated *de novo.* This is the point of my contention, and the legitimate centre on which the interest of my subject revolves. And we are happy to be able to add that since our last com-

munication* on this subject, the weight of Professor Williams' authority has been especially thrown in with us, for he has maintained that although it is possible for a case of disease to originate *de novo*, as the result of what I have termed "primary contagion," this is not so with a germ. Ultra-contagionists, when they ascribe every case to one antecedent, unwittingly involve a sacrifice to the question of cases the result of primary infection.

Further, it has been maintained by such eminent and revered authorities as the famous physician Dr. Guy, and our own Professor Dick, that precedent contagion was not necessary to be pointed out in the understanding of the origination of specific disease ; and yet our younger contemporaries who are unable to grasp a great part of what these men taught have attempted to fling the mud of ridicule at them. Truth, however, though long suppressed, must eventually burst the bonds of those who would keep it under, and will then appear before us with double its past vigour and brightness. Every attempt to suppress truth acts upon the opinions which have been expressed in favour of it like pruning upon vigorous plants, "they grow the stronger for it." What Professor Dick said was one thing ; what his critics made him to say quite another. Let us take an illustration of this and leave our readers the judgment on the facts. Professor Dick maintained that a case of Rabies in one dog was not necessarily to be always attributed to a bite from a dog antecedently rabid. Now, mark what his critics have distorted this, simplicity itself as it is, into. They have had the audacity to assert that the learned professor contended that Rabies was occasioned spontaneously in the ordinary acceptation of the term, thus leaving the unwary reader to infer that he included the *germs* of Rabies as well, as having arisen spontaneously. From what I have already had to say it will easily be seen, therefore, that what the professor really meant was, simply that the medium of Rabies was not necessarily confined wholly to the *saliva*, but had, in common with it, that of the atmosphere as well.

Our critics, however, have not rested here. They have gone a

* "Disease-Germs *sui generis* the Essence of Contagion, and Disease-Germs Carriers of Antecedent Contagion," VETERINARY JOURNAL, 1881.

step further, filling up the measure of their iniquities as they have so done, and have even denied the very existence of the germs. "If there is a vast number of germs floating in the air, as alleged, why *ne pouvons nous pas les voir?*"—is one of the questions by which they twit their adversary. It now remains for me simply to add that what Professor Dick asserted "theoretically" has, in the present age, been experimentally demonstrated by Tyndall,* who, by the aid of the electric beam, rendered manifest the bacterial presence. Dr. Beale,† who has made the properties of living matter an especial study, and has well-nigh exhausted the subject, has merely modified this latter in one point, by maintaining it to be impossible for mature bacteria to exist in wholly dry atmosphere, for as living matter, always having a certain amount of water in it, the extreme dryness would, by removing this liquid, render life extinct. But on the other hand, he admits that the "*germs* of bacteria may exist in countless multitudes in the atmosphere, deposited in and upon the insoluble particles of various kinds which are always present. These, under favourable circumstances, will germinate, and the resulting bacteria grow and multiply. Besides, germs exist which are so minute as to be perfectly invisible when first formed, even under the highest magnifying powers yet made. They grow, however, and, after a time, become large enough to be distinctly visible." And other experiments more recently carried out have been the means of demonstrating their existence in moist air,—which only go to prove the fact that their existence is governed by qualifying conditions. This notwithstanding, we cannot consider the above even as a discovery of to-day, for we find Hippocrates‡ himself saying that "Alterations and variations of the seasons do most especially bring forth diseases. All diseases are caused in any time of the year, yet some are caused and stirred in some one time more than in another."

It has been asked why, if these bacteria always exist and everywhere, are not all afflicted by disease? The answer is very

* "Notes of Lecture on the Germ Theory," by Professor Tyndall, F.R.S., LL.D., at Royal Institution, London, 1877.

† "Microscope in Medicine," by Lionel S. Beale, p. 144.

‡ "Mellificium Chirurgiæ," by Dr. James Cooke, of Warwick, edited by Dr. T. Gibson, M.D., F.R.S., p. 442, 1675.

simple. Certain species of bacteria do exist everywhere, but these are not all disease-producing bacteria—these germs that are so plentiful are as harmless as plentiful. It is only where the conditions, as bad sanitary arrangement, etc., exist, that the noxious bacteria make their way thither, and should the conditions continue they naturally thrive, and perhaps desolate the surrounding region. It is no more reasonable to suppose that because the germs of bacteria always exist they must necessarily always produce disease any more than the germs of parasites should always occasion general parasitic disease. The numbers of germs, as I have said, are governed by surrounding conditions, and these germs must take their chance.

Principles of Prevention.

The Ultra-contagion Commission may evolve some ideas as to the mode of suppression of specific disease; but it is open to doubt as to whether, so far, any one of the many persons who have advocated the discardance of the theory of "primary contagion" of maladies indigenous to certain countries are possessed of a glimmering of a notion of what the best mode of suppression should be. The visitation of our country by foreign scourges occasionally imported hither will not, I think, contribute to the elucidation of this knotty question, but will, I am convinced, only serve to mislead us. From the preceding it must be clear that means of repression, if they are to prove of any avail, must be confined, not merely to animal contagion in cases of diseases indigenous to a country, but must also embrace, instead of evading, the question of the improvement of the surrounding conditions which favour primary contagion, with the atmosphere acting as its medium; as we should under such circumstances be no whit better off than if no measures of repression had been adopted in the first instance. It is only in the case of imported diseases where the medium of contagion is limited to the transference of germs from animal to animal, whether directly or through the agency of *fomites*, that these half-measures of repression could prove of any avail. But take the case of the disease in its chosen habitat, and where its seed is native, and the result of any precautions, without due care be taken to improve the

surroundings, will, so far as prevention is concerned, be absolutely *nil*. That this is practically true we are convinced by painful experience, acquainted as we must all be with the repeated failures that have attended this incomplete *modus operandi*. The bases of contagion are confined, then, not to cases of antecedent disease merely, but also belong to and are fostered by the very atmosphere we are continuously inhaling. When belonging to the former, a case of disease may be said to be the result of "secondary contagion," *i.e.*, contagion effected through the medium of an animal antecedently stricken ; while in the other case it is the result of "primary contagion," *i.e.*, contagion being carried through the medium of the atmosphere. We can well understand, too, that when the surrounding atmosphere is surcharged with certain specific disease-producing bacteria, that all materials, fluid or solid, which are in communication therewith must also during these periods be liable to harbour these latter (germs), which are thus transferred into susceptible animal systems in the shape of food or water they are made to consume. Hence the necessity of keeping the surrounding media of our animals always under strict sanitary regulations, so as to prevent, by maintaining cleanliness, the excessive deposition of germs floating in variable numbers in the enveloping air, as cleanliness acts as a barrier to the development of all disease-germs, while dirt favours it.

In the case of indigenous disease the germs belong to the country, and all measures of prevention directed solely towards transference from animal to animal (*i.e.*, through the medium of an antecedently afflicted animal) must necessarily fall short of effecting much, for it leaves out of consideration the many scores of cases that become the primary recipients of the germs contained in the air they are made to breathe.

But we must not overlook the fact that a disease, though indigenous to the country—we will take the case, say, of Pleuro-pneumonia Specifica in the ox—when by sale, inadvertence, or otherwise transferred to one adjacent (*i.e.*, if one county of England send an infected animal to an adjacent county, which was free from its visitation heretofore, or if Ireland, England and Scotland, and America interchange with each other from

time to time, and take in a certain number of infected animals when itself free from it at the time), then the county or place just receiving the infection must adopt measures to check the spreading of the germs introduced, and this can here be only done by avoiding contagion from animal to animal, viz., by advising the slaughter of *all* animals imported which are in any way said to be possessed with that contagion.

TUBERCULAR STOMATITIS.

BY G. A. J. MUIR, F.R.C.V.S., GOVERNMENT V.S., WEXFORD.

WHETHER we agree with Mr. Macgillivray or not as to the proper designation of this disease, we are undoubtedly indebted to him for the excellent papers he has written on the subject; and that his nomenclature is more applicable than that of Diphtheritis, must be apparent to every one who is practically conversant with the disease. I think, with him, that it is essentially of a tubercular nature; but as to its contagiousness, I have not been able to satisfy myself that it is so.

I had an opportunity of paying particular attention to this alleged phase in its character during the month of May last, when a farmer called and informed me that he had a calf showing rather peculiar symptoms about the mouth. There was a profuse dribbling of saliva, the breath was very fœtid, and the animal was unable to eat. Suspecting the nature of the ailment, I gently pulled out the tongue, and on its lateral aspects, posteriorly, saw the characteristic "lumps"—that on the left side being largest, and having the appearance of an indolent ulcer, the mucous membrane and superficial muscular tissue between the "lumps" and along the raphe for about an inch having a pale bluish tint; it was friable and easily broken up (a gangrenous-like degeneration of the tissues), the cheeks, gums, and pharynx being intact. The calf having lost condition, I ordered an increased supply of milk, and dressed the affected parts with a solution of Chloride of Zinc.

The patient being in a small field, along with five other calves, convenient to my residence, I determined to watch the case narrowly, more especially with regard to its contagious character,

never having considered it as such until my attention was directed to it by Mr. Macgillivray's writings. As already noticed, there was a profuse discharge of saliva, which might have been easily, and doubtless was, picked up by the healthy ones; but throughout the time of treatment, and up to the present, all have remained perfectly healthy. I do not wish to convey that this is conclusive proof of its non-contagiousness, but it adds to the scepticism I entertain of its being so. A week after my first examination of the tongue I adopted more active measures of treatment, and dug out the yellow, cheesy-looking material, leaving a rough-edged, ulcerous-like wound, and following Mr. Macgillivray's example, dressed it with Cupri sulphatis. On my next visit, three days afterwards, I found the wound partly refilled with the same kind of material; but being more recently formed, there was less *débris*, and the tubercular-like appearance of the matter was more observable. This filling up of the wound, but less in quantity each time, continued for ten days or so, until recovery was established.

The whitish-yellow material which Mr. Campbell, in a recent communication, mentioned he had seen on the cheeks of a calf suffering from Muco-gastro-enteritis, seems to me to be analagous to that observed in young children, due to a parasitic fungus—the "Oidium Albicans." This looks like curdled milk, and consists principally of epithelium and fat, in which are embedded the sporules and filaments of the fungus. Mr. Campbell has very ably described the disease from which his patient was suffering, viz., Muco-gastro-enteritis, or "White Scour," but he is evidently mistaken in supposing that there is any connection between it and the so-called Tubercular Stomatitis.

ANTHRAX FEVER, OR LOODIANAH DISEASE, IN INDIA.

BY J. MILLS, M.R.C.V.S., A.V.D., INDIA.

(*Continued from p.* 114, *vol. xv.*)

Forage.—Science has taught us that the body cannot be built up, nourished, and sustained, without such food as shall supply it

with the nitrogenous elements of muscles, the carbonaceous elements of fat, and the various mineral matters which enter into the composition of bone, and furnish an essential element of the nervous tissue. Therefore we must select forage possessing these properties; and I may remark that nothing but the best quality should be given. All articles of food ought to be sound and genuine. They must be free from spontaneous changes of condition, such as fermentation, parasitic growth, or any of those obscure changes which the tissues of vegetables in some cases undergo at certain times. They should be also unadulterated.

With the exception of Southern India, where kulthée is given, gram (chenna*) is the usual food for troop-horses, except when barley is cheaper than chenna, when the former is given, and *vice versâ*, depending, as it were, on their market value.

This chenna is grown largely throughout the whole country, and is as commonly used for feeding horses as oats are in England. Its composition, taken from Parkes, is, in 100 parts, without husk :—

Water...	11·39
Nitrogenous matters	22·70
Fat	3·76
Starch	63·18
Mineral matters	2·60

It has the appearance of irregularly-formed peas, and when sound is of a reddish-brown colour, with the husk firmly adherent, and with difficulty removed; but when the sample is a bad one, the husk is of various colours, and very dry and brittle. On closer examination, you will very likely find it infested with the weevil,† as if bad this insect is almost sure to be present.

The Government allowance of this gram per day is—"Walers," five seers (or ten pounds); stud-breds, four seers (eight pounds); which is ample, but if possible, always give it with bran, as it is of a somewhat heating nature.

* Chenna, or the gram dholl of India (*Cicer arietinum*). N. O. Leguminosæ.

† Weevil is an insect of the N. O. Coleoptera, of the family Circulionidæ. The corn-weevil (*Calendra granaria*) in its larva state is exceedingly destructive to grain. The female perfect insect lays a single egg in each grain, which when hatched turns into a grub, which eats away the interior of the grain and perfectly destroys it.

It is usually ground or split, and soaked before being given for a few hours. It can also be given without being split, soaked whole; but, of course, in that case it requires to be kept in the water for six or eight hours to thoroughly soften it. Some approve of allowing it to remain in soak until it begins to germinate, and I believe it is a very good way of preparing it.

Kulthée* is the usual feed on the Madras side of India. It is a species of small flat bean, and when of good quality it should be either of a light mottled grey, or very light brown colour. There is another kind which is perfectly black, but it is not unusual to see a mixture of all the three colours. The husk of this bean is extremely hard—so much so, that it cannot be given without first being boiled. It should just have sufficient water to cover it, and ought to be cooked slowly and thoroughly, ensuring the disintegration of the starch granules without hardening it and rendering it indigestible. When cooked, before removing it from the pan, it should be well steamed with the top off, so as to make it as dry and mealy as possible. If properly cooked, it will crumble like meal between the fingers. Before boiling it must be well washed, as it invariably contains a deal of sand and gravel. I find this sand, etc., averages a little over one per cent.; return it to the contractor and get its equivalent of kulthée in lieu. It is not so heating as gram, and is reputed to have a beneficial effect on the skin, and to improve the appearance of the coat.

The Government allowance of kulthée per horse per diem is—"Waters," five seers (ten pounds); country-breds, four seers (eight pounds).

Bran.—Nothing but the very best quality of bran should be given, as it forms such a convenient vehicle for the conveyance of filth in general, and especially sand; and I firmly believe that there is more sand conveyed into a horse's stomach by one feed of bad bran than in fifty feeds of gram or kulthée.

* Kulthée. Dolichos (a bean), "wall" or "Ghot-wall" of India. Its composition, after Forbes Watson, in 100 parts without husk, is as follows:—

Water	12·03
Nitrogenous substances	23·27
Fat	2·20
Starch...	59·38
Mineral matters	3·19

A good test for the presence of sand is to fill a large measure glass with clean water, then place a handful of bran on the surface, and tap the edge of the glass with the tip of the finger, and if sand is present it will fall to the bottom. The above test is good enough for all practical purposes, and will be found most useful in making a hurried inspection.

If sand is present, reject the bran at once, and rather let the horses go without it than give it them, as there is more harm done through the giving of dirty bran than we have the remotest idea of.

It is most difficult to procure sometimes in India of the desired quality, unless you are near to some Government bakery, and that is not always the case. In the rainy season it is very hard to keep for any time, owing to the humid state of the air, which very soon renders it "sour," when it is then utterly useless.

When procurable in sufficient quantity, the troop-horse ought to have at least one seer (two pounds) daily (especially if his staple feed is chenna) in conjunction with his other ration of grain, as it prevents constipation, and in that way acts beneficially on the system.

Grass.—Dūb, or dhoob,* is said to furnish no less than three-fourths of the food of horses and cattle in India. In a great many parts of the country during the hot season this grass is most difficult to get, being completely dried up with the heat of the sun ; but this I am sure could be remedied to a certain extent, if during the season of the year when it is plentiful a large supply was brought in by the grass-cutters, made into hay and properly stacked. This dūb hay, if "well-got," is eaten by the horses with considerable relish, and acts as a very good substitute for the green grass.

Before it is given, the grass ought to be well shaken up and

* Dūb, Bengal ; Hurry-alee, Madras. (*Cynodon dactylon*, Royle ; *Agrostis linearis*, Keon.) There are generally considered to be three kinds of dūb. The best, which throws out the creeper-like stem, is called Paundā. This is essentially the same as the florin grass of the English farmers. The second, which is smaller, grows on hard ground, and is called khūtya dūb. The third is called the sufēd, or white dūb, from its peculiar colour, and is used by native practitioners as a medicine in fevers.

beaten, so as to clean it and remove the earth from the roots. Never allow the grass-cutters to wash it under any pretence whatever, as it is sure to be done in dirty water, and after such treatment it rapidly becomes sour and "heats." It should also be well-picked, and everything mixed with it removed, and nothing but the pure dūb accepted.

Strict inquiry ought always to be made as to where the grass has been cut, as if taken from the bottom of drains, or in the vicinity of decomposing animal or vegetable matter, it is liable to convey disease. Therefore the ground ought always to be selected by a competent person.

Every regiment and battery in India should have its own "rukh" (grass land), carefully selected and properly kept clean; and if this rukh was well manured with the litter from the stables, there is little doubt that good grass would be obtained.

Large quantities of dūb, if good, can be consumed by a horse in a day, but the regulation allowance of twenty seers (forty pounds) is quite sufficient to keep him in good condition.

There is another kind of grass, called "rumnah," which is very like our English rye-grass, but stands taller and stronger. It grows in some parts of Southern India to great perfection, and makes sweet and nutritious food, and can be made into capital hay.

The allowance of this grass is fifteen seers (thirty pounds), as it is much lighter and drier than dūb.

Salt.—The benefits of a regular and sufficient supply of salt are incalculable. It forms an essential constituent of the blood; the loss of saline particles therefrom by the secretions being repaired by the giving of this mineral, and in that way it keeps the body in health.

Horses are more or less fond of it, as shown by the manner in which they will lick a piece of rock salt if kept near them. As it is not practicable to keep pieces of rock salt near to troop-horses, owing to the "chronic kleptomania" from which the syces suffer, the only thing to be done is to mix it with the gram ration. Each horse ought to have at least two drams of salt daily, and always make it a rule that there is never any harm in giving too much, but very great harm in giving too little.

Water.—Water, like air, to be wholesome must be free from the presence of impurities. This is a well-known fact; and it must also be sufficient in quantity, without which it is impossible to preserve health. The noxious ingredients most to be dreaded in impure water are animal organic matter, especially of fæcal origin, and vegetable organic matter and some salts. The diseases such water is liable to produce are many and varied. There are numerous tests for the detection of the impurities contained in water, and I may remark that whenever they are suspected, lose no time in having it thoroughly examined by some one who makes it a special study.

As regards the presence of bacteria in water, Burdon Sanderson says that—"The germs (if the term may be allowed) of bacteria may exist in water, and be indetectable by the highest microscopic powers, or even by Tyndall's test by the electric beam. The present view is, that while it has not been conclusively shown that bacteria or vibriones are in themselves hurtful (though they are held by some observers to be so), their presence indicates the co-existence of certain organic substances and putrefaction, and putrefactive substances in water are certainly dangerous."

The presence of bacteria in water is of the utmost importance to us, as this Loodianah Disease, or Anthrax Fever, is supposed to be due to their presence in the blood, and to reach the blood they must be either taken in through the medium of the drinking-water, the food, or the air; but Burdon Sanderson's experiments are not favourable to the theory of the introduction of bacteria from the air. However, it is a subject well worthy of every investigation.

Just let us look at the importance which the Arab of the Sahara attaches to pure water for his steed.

"They are very careful and particular in their choice of food, and above all of the water they give to their horses. Many a time during the early days of the conquest, while on an expedition, after long marches in an intolerable heat, with a south-west wind blowing that choked us, and drove the dust and sand into our faces, when horse and foot alike panting, exhausted, without power of motion, we delivered ourselves up, worn out as

we were, to a fatiguing sleep, often interrupted by the alerts caused by the enemy prowling around us—at such a time I have seen the natives go a league from the bivouac in order to water their horses at some pure spring known to themselves. They prefer to risk their own lives to experiencing the pain of watering their horses at the scanty rivulets in the encampment, quickly converted into filthy drains by the trampling of men and beasts of burden."*

The water supply, according to circumstances, may be from wells, shallow or deep, springs, rivers, or collected rain-water in pools. Under ordinary circumstances, and when the troop-horse is at a station, as a rule, good well-water is procurable, and should always be used in preference to river or collected water, or even springs, as impurities reach them from a variety of sources.

A covered well is always preferable to an open one, as, to a considerable extent, impurities are prevented from gaining access to the water from above, and in that way it may be kept comparatively pure.

On horses marching into a new station, the wells may have been disused for some time, and in that way the water may have become bad. Therefore make inquiries and ascertain the fact. If such has been the case, it is always safer to have the wells emptied and thoroughly cleaned out before being used.

The surroundings of the well ought always to be looked into, and everything of an objectionable nature removed, and the ground in the vicinity kept scrupulously clean.

If the horses are watered from a trough or buckets, they should be thoroughly cleaned daily.

The amount of water an animal drinks depends entirely on the state of the system at the time, the temperature, and the description of food it has been receiving.

There is no rule that can be laid down as to the actual quantity of water to be given. Simply under ordinary circumstances allow the animal to drink as much as it pleases; but if a horse has been without water for a long period, let the supply be limited at first, and gradually increased until the state of the system will allow of it being drunk *ad libitum*.

* "The Horses of the Sahara." By E. Daumas.

In temperate climates three times a day is often enough to give water, but in India a horse ought to be offered water not less than four times daily. Once before each feed, and again about nine p.m. A great many people are in favour of watering only three times, but I have seen horses drink greedily in the evening, more especially during the hot season ; but, of course, during the winter months (cold season), when the atmosphere may be called temperate, three times may be quite enough.

Bedding.—A good straw bed is just as essential an agent in maintaining health as good food, and what is more trying to the system than a want of proper rest ? and what is more distressing than a hard bed ?

If at all procurable, at least six pounds daily of straw should be allowed. In the morning it must be removed, the litter well shaken out of it, and put in the sun to dry until required again in the evening. Paddy (rice) straw makes the best bed.

Feeding.—Animals such as the horse should have a good meal three times daily, with little or nothing between, as by doing so we arrest the process of digestion of the food already in the stomach.

About two hours after a meal, the contents of the stomach are in a state of fermentative change ; if then more food is added, this passes out, the whole process has to be gone over again, thus not only weakening the stomach, but rendering its contents unfit for the purpose of nutrition. Good blood depends upon good and proper nutrition, and proper nutrition depends upon perfect digestion ; so let this be borne in mind in feeding the horse.

The three daily feeds of grain must be given at regular intervals, but never let the interval be too long, as it makes the animal's appetite ravenous, and the feed, when given, will simply be " bolted " instead of being slowly and properly masticated.

The bruising or crushing of grain must be considered as a matter of the greatest importance, and is the means of saving a considerable quantity of it. And another circumstance to be taken into consideration regarding crushing is, that if grain be given whole it causes a great deal of useless and extra exertion of the stomach in endeavouring to digest it. This exertion is very injurious, gradually weakening that important organ, and

laying the foundation for many diseases. Whereas, if properly crushed, and not given in excess, but duly proportioned to the horse's work, it will be perfectly masticated, digested, and assimilated.

If either iron or proper brick mangers cannot be got, the only thing to be done is to use a nose-bag for feeding out of. The one in general use is made of leather, and would answer the purpose very well, were it not that from being frequently washed and put in the sun to dry, it becomes perceptibly smaller and harder the longer it is in use—so much so, that it is quite common to see horses with wounds on the jaw from the friction against the edge of the bag during the act of mastication.

It ought to be rigidly enforced that each nose-bag have the troop or battery number of the horse on it that uses it, as one animal might be suffering from a highly contagious disease undetected, and its nose-bag would be almost certain to be put on another horse, and thus spread the disease—in fact, unless they are properly numbered in large bold figures, I see nothing to prevent them becoming mixed up.

Grooming.—In a tropical climate, the excretion by the skin is greater than in a temperate one ; therefore, such being the case, every attention must be paid to its cleanliness, so that the free discharge of the products of perspiration may not be interfered with.

The sympathy or consent that exists between the skin and the internal organs of the body is a striking circumstance, but still a true one, and is being daily demonstrated to us. As an illustration of this fact, take the stomach. Let a horse under certain circumstances drink cold water, and watch the effect on the skin —the animal will break out in what is termed a "cold sweat."

Then, again, if a horse comes in heated after a journey, and is exposed to a cold wind or rain, the consequence will very likely be inflammation of some of the internal organs. Many other circumstances might be brought forward to show the intimate connection between the internal organs and the skin, but the above demonstrates how necessary a healthy state of the skin is, and good grooming, in combination with good food, etc., is the only means by which it can be kept healthy.

Grooming serves two great purposes: it removes from the surface

of the skin the scurf or worn-out cells, the unevaporated effete material given off from the system, and foreign bodies deposited by the wind; and the healthy friction of the brush imparts a tonic effect to the whole frame.

If a horse is not properly groomed, or not groomed at all, he soon loses condition, his health becomes impaired, and actual disease of the skin itself may result.

A glossy coat—which every one loves to see—is not only due to the clean state of the hairs themselves, but also to the increased secretion the sebaceous glands throw out, consequent on being so thoroughly stimulated in the act of grooming.

Those parts of the body such as the nostrils, ears, and dock, ought to be sponged out twice a day. And the sheath and penis ought to be kept scrupulously clean by being frequently washed out with soap and water.

In the hot season the washing of the body is most refreshing, and no doubt imparts considerable tone to the system, and in that way is beneficial; but unless everything is at hand to dry the animal thoroughly after washing, do not attempt it.

Clothing.—Health depends in no small degree upon good clothing, provided it be judiciously applied. Of course, during the hot season it is not much needed except when horses are in camp. On such occasions, when the sun is hot, the "jhool," or blanket, folded double and laid along the spine, will be found a capital protection from its injurious effects.

During the cold season it must be used as required, but always with discretion, as there is no greater factor in the production of disease than an animal perspiring profusely under the load of a heavy blanket, or in standing shivering without one.

(*To be continued.*)

EMBOLISM.

BY M. J. TREACY, M.R.C.V.S., INDIANAPOLIS, INDIANA, U.S.A.

IN answer to a telegraphic summons on June 5th, I proceeded about one hundred miles south of this city, and on my arrival, found my services were sought relative to a handsome black

(six years old) steed, with the following history:—Intermittent lameness for six months; had been treated by empirics without any beneficial results. I found him standing in his box, looking the picture of health; pulse, temperature, etc., normal; had him walked, paced, and turned; still showed no lameness. Hitched him to a sulkly, and had not paced him two hundred yards, when he exhibited stiffness of both hind limbs, and after proceeding a short distance, he was unable to move a step further. His distress was very great, breathing and respiration much hurried, and back arched; the perspiration from his loins, *forward, literally poured off him in showers, but from that region backwards the body and limbs were deadly cold and clammy.* With much difficulty (after some rest) we got him back to his stable, when on rectal examination I discovered the great aorta and right and left external and internal iliac arteries to be almost plugged up; so much so that, judging from their pulsations, the greatest calibre could not exceed that of a crow-quill. The pulsations in front of the Embolism were strong and powerful, while in the diseased parts they could scarcely be felt, and manipulation easily detected their channels to be almost filled with a gummy material, yielding to the finger touch, and of an elastic nature.

Treatment nil; advised the owner to destroy him, or in case he did not do so, put him under a course of Potass. iodide. Unfortunately this animal was sold by auction, and I lost sight of him.

Editorial.

THE ARMY VETERINARY DEPARTMENT IN EGYPT.

The despatch of an Army Corps to Egypt from this country, and another from India, to suppress rebellion in the land of the Pharaohs, has attracted a large amount of attention, from a military and political point of view, and should also excite a lively interest among medical men and veterinarians. The resources of the Army Veterinary Department have been rather severely taxed, as twenty-five of its members had to be sent off with the expedition, some at very brief notice indeed, and about six thousand horses had to be embarked from England in ships specially fitted up for them. Depots will be formed at Malta and Cyprus, but the main portion of the animals will be in Egypt, the total number probably exceeding eight thousand at the commencement of operations.

Everything that experience or forethought could devise has been adopted, in order to convey these animals to their destination in safety, and to maintain them in health and efficiency after arrival; and so far with great success. But the climate of Egypt has to be considered as a serious factor, in addition to the other influences which are always more or less in operation in the production of disease and inefficiency during a campaign. Of the influence of the climate of Egypt on the health of animals, we unfortunately have not much evidence of either a negative or positive kind. That country has always had an evil reputation—particularly Lower Egypt—since the time of the seven plagues, and apparently not without reason; for mankind and animals appear to have been decimated at different times by outbreaks of the most fatal and destructive diseases, while other almost special, and certainly very injurious maladies, are never absent from it. For instance, there are the fevers, diarrhœa, dysentery, and other disorders usually prevalent at certain seasons in countries situated in that geographical position, and possessing the physical characteristics of Egypt; and besides these, there is the contagious Ophthalmia, and perhaps the still more serious parasitic diseases produced by the trematode worm, the *Distomum* or *Bilharzia hæmatobum*, which inhabits the bloodvessels, and lives on the blood corpuscles, giving rise to hæmaturia and other serious symptoms; and the mematode worm—the *Ancylostomum duodenale*—which infests the upper part of the small intestine, burrowing into the mucous membrane, and giving rise to a very intractable form of anæmia from which a large proportion of the native Egyptians suffer, and which Greisinger has designated "Egyptian Chlorosis."

The geographical position and physical configuration of Lower Egypt have contributed much to render it insalubrious. It is annually exposed to far-spreading inundations by the overflow of the Nile, and the retiring waters leave behind them a reeking morass, which, owing to the nature of the deposit of mud left by the floods, together with the large amount of moisture and the hot sun shedding its rays direct upon it, shortly after becomes a beautiful green plain, covered with the rankest and most luxuriant vegetation, and pools of stagnant corrupted water. Then quickly succeeds a period when it is an arid desert, deeply laid with dust and hot sand, and endowed with nothing that can tend to the welfare of animal life. We need scarcely wonder, then, that particular diseases should be more than usually common, and while such a country must present many obstacles of a formidable nature to the operations of an army—and especially to the movements of cavalry and wheel transport—it must also prove a source of considerable anxiety to veterinary officers engaged in the expedition.

An able writer, Wilson, who described our first campaign in Egypt in 1801, states:—"Lower Egypt is only practicable for military operations six or seven months in the year (from the latter end of February until the middle of August). The inundation is completed at the beginning of September; and not before the month of December can any individual, well acquainted with the passes, traverse the country, for there are no bridges or regular roads. Troops with artillery will not then attempt

their movements, as the water in the canals is too low to admit of boats being used, and the mud is too deep to wade through. Sometimes a passage is not open before the beginning of March. The many high banks of the canals, the deep fissures in the earth, surrounding every square foot, caused by the sun cracking the dried mud forming its soil, do not afford a surface for cavalry. Although the horses there seldom pass out of a foot's pace, except for the gallop of a few hundred yards, most of them are foundered, and none, if pressed in a trot for ten miles would be able, from want of wind and stamina, to proceed."

The experience then gained does not lend us much assistance. During the army operations in Egypt in 1801, the force of cavalry (consisting of a detachment of the 11th Dragoons, now Hussars, 12th Dragoons, now Lancers, 26th Dragoons, and a detachment of Hompesch's cavalry regiment) and number of animals employed were comparatively insignificant, and there do not appear to have been any veterinary surgeons with the expedition. So that there is no veterinary medical record remaining to inform us as to the losses and diseases among the horses and other animals then employed.

But that Lower Egypt is insalubrious to animals we have modern evidence to show. The horses there are deficient in stamina and speed, cattle and poultry do not thrive, and the buffalo is perhaps the only one of the larger domesticated animals that is adapted to the climate. Cattle Plague, when introduced into the country, appears to be most destructive, and carries off nearly all the ruminants; at certain periods the ravages wrought by the *Distomum hepaticum*, or liver fluke, are quite appalling, horses, cattle, buffaloes, sheep, and goats, falling victims to it, and the Bilharzia has been found in the bloodvessels of cattle; while horses are liable to a peculiar epizoötic fever of a very fatal character—a widespread outbreak of which is recorded in an early volume of this Journal.

Some years ago, during the government of Mehemet Ali, a veterinary school was established at Abouzabel, and M. Hamont, its director, alluding to the diseases of animals, writes: The breed of cattle in Egypt is generally weak in constitution and neglected. Epizoötic diseases frequently effect the most dreadful ravages among them; sometimes they devastate the country to such a degree, that men are harnessed to the plough and the cart, in order that the land may be, although imperfectly, cultivated, and some assistance obtained. Horses suffer much from Farcy, and softening of the liver is a primary and essential malady, very widespread among army and country horses, more common in summer than in winter, and attacking by preference the fattest and those of adult age. It is a very redoubtable disease, and kills many horses. Intestinal hæmorrhages are also very frequent and most fatal to horses. These animals, and also cattle, sheep, and camels, suffer from a deadly Dysentery. Indeed, Dysentery is very common in summer among troop and other horses, attacking those which live in the open air, as well as those which inhabit low and badly-ventilated stables. In regiments there sometimes breaks out, during the months of July and August, an acute form of Dysentery which kills the horses in a few hours. The mud,

earth, and sand which the water of the Nile contains, and which these animals drink, is the cause of this Dysentery; these matters are found in the intestines. The great crowding of animals, the intense heat, and too dry and unvaried food, are also determining causes. The Dysentery of cattle is especially widespread, attacking the oxen in the villages and towns, and all over the country, as well as the government herds. It is a murderous disease, destroying life with great rapidity. The Dysentery of camels is sometimes acute, sometimes chronic, and kills a very great number; when it is acute its course is very rapid. At Cairo, the camels are lodged in great enclosures open on nearly every side. There they pass their days and nights in the cold season, after a very hot summer, and in this state, of course, they must experience the troublesome effects of the sudden diminutions of temperature which take place. One of the forms of Anthrax which is enzoötic and epizoötic in Egypt, appears to be very destructive among cattle, in the form of gangrenous sore-throat. The disease reigns over the whole country in winter and summer, spring-time and autumn. It is contagious, and carries off the animals in two, four, and six hours. It has its seat in the throat; a tumour appears there, quickly increases in size and extent, and at last causes death. The expired air and the saliva communicate the disease from sick to healthy, as experiments have proved.

Splenic Apoplexy—another manifestation of Anthrax—is also very frequent among ruminants, and malignant pustule is seen in the horse in the months of May and June, during the prevalence of the very hot kamesine wind.

How the climate may affect the horses sent from this country, will much depend upon their lengthened exposure to it, the vicissitudes they may have to encounter, and other circumstances. But, as before remarked, nothing has been omitted in the preparations for contingencies such as are likely to arise in Egypt, while the very large and experienced body of veterinary officers—the majority of whom have already seen active service in South Africa and Afghanistan—under the able direction of Inspecting Veterinary Surgeon Meyrick, should ensure close and careful supervision over the sanitary condition of the animals, and skilful medical and surgical attention when required. At any rate, the arrangements made contrast most strikingly with those devised for the Crimean War, and mark an immense advance in the Army Veterinary Department during the years that have passed since 1854.

PROTECTIVE INOCULATION FOR SPLENIC APOPLEXY.

In the *Journal de Médecine Vétérinaire et de Zootechnie* for July, under the heading "Experimental Study of the Conditions which will permit the Employment of Toussaint's Method of attenuating the Anthrax Virus, and Vaccinating Animals liable to Splenic Apoplexy," Professor Chauveau, Director of the Lyons Veterinary School, has a note on this important subject. In being the first to indicate a procedure of vaccination against Splenic Apoplexy, he remarks, M. Toussaint has rendered a signal service to science and agriculture for which he has not obtained sufficient credit, because

public attention has been diverted from his discovery by the great and legitimate applause which attended the researches by which M. Pasteur was soon afterwards able, by artificial cultivation, to attenuate Anthrax Virus, and cause it to reproduce itself indefinitely, with its more or less benignant properties. But, on the other hand, the inventor of the first Anthrax vaccine,* for the present condemned to inaction through disease, has not been able to give to his discovery its full development. It appeared to the late teacher of Toussaint (Chauveau himself) that it was his duty, pending the complete restoration to health of his pupil, to show to the public, by new experimental researches, the importance of this discovery. It is known that Toussaint vaccinated sheep to protect them from Splenic Apoplexy, by inoculating them with Anthrax blood which had been heated to a certain temperature for a few minutes. It is also known, through the demonstration given by Pasteur, that the elevation of temperature acts by attenuating the activity of the virus—the Anthrax bacteria. This curious modification, brought about almost instantaneously in the virulence of these bacteria, does it differ essentially in its nature from the attenuated virulence of the bacteria which are developed and multiplied at the relatively high temperature of 107·6° to 109·4° Fahr.? In every case it is supposed to be much less certain, but I purpose demonstrating that this is an error. When employed according to certain rules which I shall presently mention, the heating, for a very brief time, of blood infected with bacteria transforms that fluid into a vaccine as certain in effect as that of Pasteur.

The first and principal rule to follow, is to heat the blood in such a way as to at once raise it, throughout its mass, to the desired temperature, and to remove it as promptly from this influence. When the quantity of blood which it is desired to modify is too large, every part of it is not uniformly acted upon by a very brief heating; the virulent agents in the deeper layers preserve all their activity and aptitude to cause mortal infection; and when the heating is too prolonged, there is the probability that the greater portion of the virulent agents may be absolutely killed. To avert this danger, the blood should be put into small cylindrical pipettes not more than one millimetre in diameter (0·039 inch). The extremity of these pipettes is sealed, and the portion containing the blood is then plunged into a large quantity of water heated to, and maintained at, the desired temperature. After a certain time has elapsed, the pipettes are withdrawn and plunged into cold water. Owing to the small mass of the vehicle containing the virulent agents, these are all heated and cooled together, with a precision which leaves nothing to be desired.

Another rule should be rigorously observed, if the success of the operation is to be fully realised. It is necessary that the blood be collected under conditions which ensure that all the virulent agents introduced into the tubes have the same vitality and activity, and that they will be influenced in the same way by heating. This is the case when the blood is obtained from a guinea-pig that has died thirty-six to forty-eight hours after inoculation with a very active virus. Before putting the blood in the pipettes, it should be allowed to clot; this clot is then broken up and squeezed, in order to obtain defibrinated blood, which is always very rich in virulent rods.

In an hour, from only one guinea-pig, it is easy to prepare sufficient vaccine to inoculate more than five hundred sheep. The inoculation is made with the point of a lancet, charged in the manner practised in my laboratory, with a very small quantity of virus. Two or three large subcutaneous punctures made on the inner side of the ear are sufficient for an active inoculation.

* This is a very misleading and improper term for the modified Anthrax Virus.

The vaccine thus prepared should be used at once, or the day after its preparation at the latest. Experience has assured me that it is then as inoffensive and efficacious as Pasteur's vaccine, *provided the heating has been practised at the proper temperature and for the necessary time.* This is the point which has the greatest interest for me at present. Between the degree of heating which almost entirely deprives the blood of its activity, and that which leaves it all its virulence, it is generally admitted there is only one intermediate stage, which corresponds to a degree of attenuation more or less difficult to obtain. This is a mistake. My investigations lead me to believe that the margin comprised between these extreme points is so wide, that by more or less heating several degrees of attenuation may be obtained. Nothing can be more easy than to produce in this way, and in a few minutes, five or six vaccinating viruses having an almost regularly graduated activity. So far as varying the activity of the vaccine-virus is concerned, this method is simplicity itself. The following are a few indications as to its employment and results.

It is in starting from a temperature of 109·4° to 111·2°, which is sufficient to prevent the development and multiplication of the *Bacillus anthracis*, that the heating of Anthrax blood intended for vaccination material may be submitted. The operation is always successful at a temperature of 127·4° to 129·2°, and it has always most likelihood of success if this limit is not exceeded.

Naturally, the duration of heating should be in inverse proportion to the elevation of temperature and, given a certain temperature, directly proportionate to the degree of attenuation sought to be obtained. For the time being, I shall put to one side the experiments I have made with temperatures lower than 122° ; it will suffice, for the moment, to indicate the results produced by heating at a temperature of 129·2°, 125·6°, and 122°. From nine to ten minutes' exposure to a temperature of 129·2° is sufficient to completely kill the bacteria of Anthrax blood. This time is too short to perfectly ensure the attenuation of the virus; and, besides, heating to 129·2° is to be avoided, although I have obtained Anthrax vaccine in heating virulent blood at this temperature for eight, seven, six, and five minutes. At 125·6°, on the contrary, we may operate with almost complete certainty ; and it then requires a heating for fifteen to sixteen minutes to destroy all vitality in the virus. When heated for fourteen minutes, the virulent activity is still present, but extremely attenuated, and this attenuation is gradually less marked when the period of heating is diminished to twelve, ten, eight, and six minutes. It is the heating at a temperature of 122°—that resorted to by Toussaint—that I have studied with the greatest care. At this temperature it requires about twenty minutes to kill the Anthrax bacteridia. Heating for eighteen minutes produces an excellent vaccine, very much attenuated ; and the attenuation is still marked after heating for ten minutes, though it is not sufficient to render the primary inoculations absolutely inoffensive ; if the heating is reduced to eight minutes the risk is increased. Between these two extreme degrees of attenuation are naturally a certain number of gradually increasing intermediate degrees, varying with the heating interval of from ten to eighteen minutes. A first inoculation with weak vaccine (blood heated for fifteen minutes at a temperature of 122°) protects sheep subsequently inoculated with the most active virus.

It is not only by the result of inoculations that a judgment may be formed as to the degree of attenuation that heating for a more or less brief period communicates to the activity of Anthrax virus. The diminution in virulence always coincides with an equivalent decrease in activity of proliferation of the microphyte ; and the recognition of this decrease constitutes a very interesting and elegant means of proving that the attenuating influence

of heating varies with its duration. Thus, if ten small quantities of mutton broth are contained in as many small cultivating vessels, and each is inoculated with a drop of the same Anthrax blood, not heated, or heated at a temperature of 125·6° for eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, or sixteen minutes, when placed in a stove at a temperature of 100·4°, cultivation does not proceed in the same manner in all of them. If carefully observed at short intervals, it will be noted that the process of proliferation begins to appear in the fluid containing the non-heated blood ; then in those in which is the blood that has been heated for eight, nine, and ten minutes—the process being more delayed in those in which the blood has been heated for eleven and twelve minutes. In about twenty-four hours the process has scarcely commenced in the fluid inoculated with blood exposed to the elevated temperature for thirteen minutes ; and it is not until forty-eight hours have elapsed that the first traces of proliferation are noticed in that which has been heated for fourteen minutes. In that which has been heated for fifteen minutes the development of mycelium is very problematical, and in that exposed to heat for sixteen minutes it is impossible.

These new facts give a real value to Toussaint's discovery ; and though I refrain from comparing it, so far as its scientific importance is concerned, with the marvellous creation of races of vaccine-virus due to M. Pasteur, yet I think, with regard to practical utility, the two methods of vaccination may equally share in public favour for the services they render to agriculture.

THE PROTECTION OF UNINFECTED COUNTRIES FROM RABIES.

THERE are at present certain parts of the world into which Rabies has not been introduced, notwithstanding the fact that the canine population therein has been, to a large extent, imported from countries where this serious and alarming disease is always more or less prevalent ; and this exemption of some at least of these favoured regions, must be attributed entirely to the happy accident that no infected dogs have been among the arrivals from the dangerous sources. Their exemption is certainly a very strong argument in favour of the non-spontaneous generation or development of the disease, as in these countries dogs are exposed to all the external influences which are supposed to produce Rabies, and yet it is unknown.

But it would appear that the greater and more frequent prevalence of the scourge in Europe and America, and even in India, as well as a better knowledge of contagious diseases, is rousing the apprehensions of the exempted countries to the grave danger they are exposed to, by allowing the unrestricted admission of dogs at their ports, and the necessity for protecting themselves against the invasion of a disorder that is, perhaps, of all maladies the most terrifying, and at the same time the most destructive of that affection and companionship man entertains for the dog.

Australia and New Zealand are two of the countries to which Rabies and Hydrophobia are unknown, and New South Wales has taken the lead in this matter, by seeking to obtain information as to the course to be pursued in maintaining that and the adjoining colonies free from the disease. The following correspondence may therefore prove of interest, as showing the immunity enjoyed by these countries, a point of historical and pathological importance, and also as evidence of the enlightened views entertained by Sir Henry Parkes, the Premier of New South Wales, as to the necessity for adopting active police measures.

Colonial Secretary's Office,
Sydney, New South Wales.
1st December, 1881.

SIR,—The Chief Inspector of Stock having drawn attention to the risk incurred by the unrestricted introduction of dogs into this and the neighbouring colonies, from countries where the disease of Hydrophobia exists, I have the honour, at the instance of the Minister for Mines, to request that you will be so good as to obtain the opinion of Dr. Burdon Sanderson and Mr. Fleming, M.R.C.V.S., on the subject, for the guidance of this Government.

I have the honour to be, etc.,
(Signed) HENRY PARKES.

The Agent General for New South Wales.

5, Westminster Chambers, Victoria Street, S.W.
6th February, 1882.

SIR,—I have the honour to forward herein, for your information, a copy of a despatch that I have received from my Government, requesting me to obtain from you an opinion upon the unrestricted introduction of dogs into the colony of New South Wales, from countries where Hydrophobia exists. Will you, therefore, be so good as to favour me with your opinion at your early convenience?

I have the honour to be, etc.,
S. SAMUEL, Agent General for New South Wales.

G. Fleming, Esq.,
Royal College of Veterinary Surgeons.

London, February 14th, 1882.

SIR,—I beg to acknowledge the receipt of your communication of the 6th inst., requesting my opinion as to the risk incurred by the unrestricted introduction of dogs into New South Wales and neighbouring colonies, from countries in which Rabies or Hydrophobia prevails.

In view of the fact that this malady is apparently on the increase in all the countries in which it is now present; that certain regions—as Australasia and New Zealand—are still exempt; and that it is a purely contagious disorder, *i.e.*, does not arise spontaneously, but owes its existence and dissemination solely to its contagious properties; it must be evident that its advent in countries yet free from it is merely a matter of course, a question of time, unless steps are taken to prevent its introduction by very stringent measures.

That Rabies can be so excluded is an undoubted fact. For instance, in the Indian Ocean we have the island of Mauritius, a British possession, into which the disease was imported in 1813, and into which the admission of European or other dogs has never been interdicted or controlled in any way. There Rabies is as prevalent as in England or on the Continent of Europe.

Not far from this island is the French island of Reunion, almost identical with the Mauritius, so far as geology, climate, flora and fauna are concerned, and not different in any important respect with regard to the breed of dogs.

Yet in Reunion Rabies is absolutely unknown, and I cannot discover that a case of the disease has ever been witnessed there. This immunity is due to the fact that the importation of dogs is rigorously prohibited.

In order to maintain New South Wales and other uninfected colonies free from the dreadful scourge, two courses are open. Either impose a

quarantine on imported dogs, or entirely prohibit importation or landing of dogs from infected countries.

But quarantine, to be effective, must be very strict ; and as the period of incubation or latency of Rabies is extremely indefinite—ranging from a few weeks to more than a year—quarantine should therefore be sufficiently long to cover the maximum term of latency.

Seeing the difficulty, expense, and even danger to be apprehended from quarantine (as from dogs escaping), I would strongly advise recourse to rigid prohibition, unless really effective quarantine can be guaranteed.

In the imposition of quarantine or prohibitive measures, no exceptions should be made as to breed, class, or value of dogs, as all dogs in infected countries are exposed to infection, and must therefore be looked upon with suspicion as a source of danger.

I have the honour to be, etc.,
GEORGE FLEMING, F.R.C.V.S.

Sir S. Samuel, C.M.G.

RECOVERIES FROM RABIES AND HYDROPHOBIA.

AT a recent meeting of the Paris Academy of Medicine, a memorandum was read by our colleague M. Decroix, Hon. Associate, R.C.V.S., reporting nine cases of recovery from this disease.

In the first case, Dr. Menecier had inoculated, with the saliva of a mad dog, two other dogs and a rabbit. The three latter died of Rabies, while the former, which had supplied the virus, recovered.

Among the experiments on Rabies which M. Decroix had made, one of them was the inoculation of a dog with the saliva of a mad dog. The latter died while the former became first mad and then recovered. M. Decroix had also inoculated, with saliva taken from a man some hours before he died mad, a dog, which became mad, but ultimately recovered.

The fourth case was one in which M. Rey, formerly Director of the Veterinary School at Lyons, received into the hospital a dog bitten by another mad dog. It became rabid, but finally recovered.

M. Laquerrière, military veterinary surgeon, also reported a case of a dog which, when bitten by a mad dog, became affected with the malady, and was ordered to be destroyed ; but the proprietor did not wish to lose the animal, and it recovered without any treatment.

In the sixth case, Dr. Lunel had treated a reaper who went mad after being bitten by a rabid dog, and he recovered ; while a dog bitten at the same time, by the same animal died.

In the seventh case, Dr. Nichols, at a time when both men and animals were going mad in the same locality, was called to attend an Englishman who showed symptoms of Hydrophobia. He recovered in a few days, although he had been bitten by a dog twenty-one days before, which had not been found up to that date.

In the eighth case a mad dog bit two men, a cow, and a dog. They all died except one of the men, who recovered.

Lastly, M. Decroix reported that he had seen a horse which showed symptoms of madness. It recovered in eight or ten days, as did men and other animals similarly affected.

In Rabies the fits commence and increase in frequency and intensity during the first two or three days ; are at their height for two or three days, and disappear in the same period of time if death has not taken place about the fifth or sixth day. The scientific men who have not seen cases which have been cured are very wrong in disregarding the cases reported by those who

have seen them recover, and in publishing only unsuccessful cases, or those where there has been an error in the diagnosis, thereby forming erroneous ideas in the public mind.

The Committee on Rabies made, during the year 1874, a series of experiments with medicines said to be useful for curing Rabies, in which they made use of pilocarpin three times, and in every case the remedies hastened death by the violent fits they brought on.

In the course of his experience, M. Decroix met with two cases of Rabies which did not end fatally.

The conclusions arrived at by our colleague are as follows:—

1. It has been experimentally demonstrated that cases of Rabies may recover spontaneously.

2. Up to the present no treatment has been proved to be anti-rabic, and cases of cure by this or that means may be attributed to the efforts of nature.

3. All the means used by the Committee since 1874, comprising principally injections of azotate of pilocarpin, have hastened rather than retarded the death of the subject.

4. Those dogs usually recovered which were left without treatment, as the medicines brought on violent fits, and there is an inclination among medical men to leave men thus attacked in perfect quiet, and only practise experiments on animals. The filing down of dogs' teeth—an easy and almost painless operation—is still the most efficacious preventive of rabific inoculation.

5. Rabid people left in the dark and kept quiet are not subject to fits, unless they are brought on by excitement or ordinary medicines ; and "as far as I am concerned," says M. Decroix, "I would rather be attacked by this kind of madness than many other diseases, particularly the rodent chancre of smokers."

CRUELTY TO ANIMALS.

THE following letter from the President of the North of England Veterinary Medical Association deserves careful attention. We have no sympathy with those who would cruelly ill-treat any dumb animal, but before a defendant is convicted the charge ought to be carefully proved. In our own experience we have known of one case at least where a man was fined for cruelty, when an experienced veterinary could have convinced the Bench that exercise was the very thing the horse required to work off a stiffness in the hock. The case given below is much more serious in its bearings, and ought to be carefully inquired into, with a view to putting a stop to what we will charitably call a looseness on the part of officials in giving evidence. The President's letter is as follows :—

SIR,—Will you kindly allow me to briefly relate the facts of an alleged case of cruelty to animals which was tried at the Newcastle police-court on Monday last, before Mr. Alderman Gregson and B. C. Brown, Esq. The animal in question, the property of Mr. G. Dickinson, was stopped from working on the previous Monday by the Inspector of the Royal Society for the Prevention of Cruelty to Animals, who asserted that there was a large suppurating wound, the size of half-a-crown, on the back, and that the saddle was pressing into it. I saw the same animal an hour or two afterwards, and found no wound whatever, there being merely an old cicatrix, and, of course, no swelling or suppuration, and no pain. The inspector's evidence was supported by two or three policemen, and the question arose, how were these contradictory statements to be reconciled? I suggested that the horse, which had been continuously worked, should be sent for, and be examined

by the magistrates. This was done, and, finding the facts as I had stated them, they immediately dismissed the case. I have known several cases where great hardship has been inflicted upon poor people by the gross exaggeration and misrepresentation of the inspectors and policemen, and this case points to the conclusion that the magistrates cannot be too careful in investigating them, and not rely too implicitly on their evidence. No doubt the Society is calculated to do a great amount of good; but they should exercise great care in selecting officers who will act with judgment, and have sufficient knowledge to know the difference between a raw wound and an old scar.—Yours, etc., HENRY HUNTER, M.R.C.V.S.—*Sunderland Echo*.

THE PREVENTION OF CRUELTY TO ANIMALS IN INDIA.*

BY R. POYSER, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, "THE CARABINEERS."

THE subject with which I propose to engage your attention this afternoon is one not only of universal interest and importance, but one which is deserving of individual consideration, affecting, as it does, the comfort and convenience of our own lives, as well as those of the dumb animals, domesticated and wild, over which man has been permitted to dominate.

Man's duty towards animals, and their protection from cruelty, have commanded more interest and practical action from us, as a nation, than has been the case with other nations, particularly with some of the Continental ones, where vivisections or experimental operations on living animals—prosecuted merely for the purpose of acquiring manual dexterity in the practice of surgery—are still carried on to an appalling extent.

It is worthy of note, however, that in none of the veterinary schools of Great Britain are these cruel and useless operative instructions on living animals permitted, for it has been proved beyond all question that by practising on the dead subject, the student, whether medical or veterinary, can gain sufficient dexterity to become a scientific and humane operator.

For many years British veterinary surgeons have—and the British Veterinary National Congress in 1881—loudly protested against the unwarrantably cruel practices of their Continental brethren, and, in conjunction with other benevolent and philanthropic persons and societies, have exerted their influence to diminish or suppress the wanton infliction of pain to which animals are subjected without benefit to science, to humanity, or to themselves.

There is another class of experimental operations to which the term vivisection is also applied, but wrongly, especially by the anti-vivisectionist, who, in his zeal and desire to suppress cruelty, allows himself to be carried away by impulse and false sentiment, rather than to listen to the truer dictates of reason, or to be guided by the teachings of science.

These experiments, as opposed to those wherein pain is unnecessarily inflicted on living animals, are undertaken for scientific and humane purposes, for the good of the animals themselves, and for the permanent benefit of mankind.

In such cases, therefore, who shall say that the infliction of pain is wanton, or that it is unjustifiable?

Our greatest veterinary authority, Mr. George Fleming, in the March issue of the *Nineteenth Century*, when writing on "Vivisection and the Diseases of Animals," observes that, "in elucidating the processes of

* A lecture delivered at the United Service Institution of India, at Simla, on the 21st June, 1882, the Hon. J. Gibbs, C.S.I., Member of Council, in the chair.

disease, in framing preventive measures, in investigating the spread of contagious disorders, as well as in perfecting modes of cure, and the most humane methods of operations, experiments on living animals are *absolutely necessary*, for their own interests, no less than for those of mankind.

"Veterinary medicine and surgery are based on humanity, no less than on utility, and their aim is to relieve or alleviate pain amongst the animals placed under the dominion of man.

"By experiments in pathology, disease and mortality have been vastly diminished, and continued experiments in the same direction will cause further diminution. If mankind benefit, so do animals. A discovery which will avert disease in one, will probably do so in others. To prohibit resort to experimental pathology would be at once to doom creatures, which we are bound to protect, to the endurance through all time of terrible suffering from diseases that might otherwise be vanquished.

"Abhorring cruelty in every shape, and desirous of abolishing it by every possible means, I must nevertheless deprecate the attempt to place a barrier across the path pursued in pathological investigations on animals."

By experimenting upon them pathologically, Pasteur, a distinguished Frenchman, has perfected one of the most remarkable discoveries of the age in medicine; not only has he manipulated and fully recognised the disease-producing agent, but has succeeded in conferring an immunity against it by inoculating healthy creatures with the infective material which has been subjected to artificial cultivation in appropriate fluids.

As vaccination is an almost certain preventive against Small-pox, so is inoculation protective against the invasion of the disease called "Anthrax," to which my observations chiefly allude.

Without experiments on animals, this practical truth could not have been arrived at; and yet it is these experiments which are being written down and clamoured against; and though they may have been numerous, they are calculated to save millions of lives, both human and animal.

It is an astonishing fact, that the very germs, or living organisms—attenuated and made less virulent by cultivation, should, when introduced into the systems of healthy animals, protect them from the fatal malady which the said germs, in their uncultured state, produce.

"Anthrax" is not the only disease capable of prevention by similar means, but I allude to it because of its universal prevalence amongst mankind and animals, and because we recognise a familiar example of its fatality amongst horses in this country, particularly those of the army, under the term of "Loodhiana Fever."

Knowing, then, that Anthrax is incurable whenever it has made good its attack, and that nothing but inoculation will prevent this, I must urge, as I have frequently done before, the advisability of applying the known and unerring results of science to the prevention of that which we cannot cure; but it is to be remembered that the successful manipulation of such intricate measures must be entrusted to experts, who have been specially trained in the principles and practice of so abstruse a subject.

I have been carried beyond the limits of my subject proper, but was anxious to preface it with these remarks, in the hope of creating a deeper and more general interest in the matter of vivisection, and the benefits its tolerance under justifiable circumstances do and will confer, the controversy on which is engaging so much professional and lay talent, and which may be studied, *ad nauseam*, in the current issues of the *Nineteenth Century* and other periodicals.

These remarks, though sketchy, will have defined the very distinct differences which exist between the two recognised forms of vivisection; and that is all I wished to do now. Reverting, however, to the prevention of

cruelty to animals, I would observe that it is a good, humane, and never-ending work, and it is a duty which we cannot conscientiously shirk ; to many it is a pleasure, a constant occupation, and a commendable object for the disposal of their time and means ; to a few it is a hobby, and like the rest of hobbies, is sometimes ridden to death, as we have seen in the question of anti-vivisection.

It embraces a subject we all know something about, some more than others, just as we are in the habit of going about with our eyes open or shut, or have given it thought and consideration, or been brought in contact with it by accident or through official or professional duty.

And whilst it lies in the power of man to be cruel, each one of us meets with opportunities of preventing cruelty to animals domesticated for our necessities and luxuries, given to provide us with food, to use in the pursuits of business, pleasure, and sport, and in the operations of war.

And we are also called upon to extend our protective influence against the infliction of unnecessary pain on creatures of wild and untameable natures, that man cannot or has no wish to domesticate, but which he brings under his command by artifice and the devices of sport, to utilize as food, to keep in captivity in the interests of zoology, or for the gratification and study of an animal-loving people.

No one is entirely independent of the use and comfort of animals. We are too apt to take it for granted that they are born and reared for these and no other purposes ; but a very little reflection will indicate that this is not all, that a certain amount of responsibility exists, which, by virtue of our supremacy over the brute creation, does not rest here, and that we are held accountable for the treatment they deserve and receive in our service, and at the hands of those who are more directly entrusted with their care, management, and employment.

As representatives of a great and humane nation, we are personally under the moral obligation of protecting all animals from undue and unnecessary suffering, and by precept and example of teaching others who may need it to do the same.

If it is the lot of animals to be destroyed for consumption, or on account of accident, or incurable disease, or to prevent the increase and spread of disease, their destruction should be accomplished by the least cruel and most expeditious means.

If conveyed by land or water, for marketable and other purposes, they should not be permitted to suffer by over-crowding, by being improperly secured, or by being carried in unnatural and painful positions ; neither should they be confined to the exclusion of a due amount of air, or kept without food and water for long periods. Over-driving, besides being cruel in any case, is especially so to fat animals, on whose flesh it has an injurious effect, rendering it disagreeable for immediate consumption.

Whether animals are utilized in the ordinary drudgeries of the world, employed in the transport of armies and their requirements, or used in that more questionable career of life called "sport," which to some is enjoyment, but to others torture and death, they should be treated mercifully, and never entrusted to the care and disposal of those who know nothing about them or their wants in health or sickness.

When lame or sick, we should secure the best and most scientific treatment obtainable ; encourage and advocate a more extensive employment of chloroform or other anæsthetic agents in major operations, and set our faces stedfastly against the empirical and grossly cruel operations which are commonly and needlessly practised in this country by uninstructed and inexperienced persons.

Few of the domesticated animals can claim entire exemption from cruelty,

though many, I should say, pass an existence of unalloyed happiness. They may not be actually tortured in the ordinary sense of the word, yet their lives may be nothing less than protracted misery, treated, as some are, with so much apparent and mistaken kindness.

This is exemplified in animals fed for slaughter—though to no appreciable extent in India—and more particularly in some of our pets, which are fed to such an extent and kept so closely confined, that death results from over-feeding and want of exercise. These, however, are not the phases of cruelty which the law recognises, because there would be some difficulty in proving the infliction of unnecessary pain. Nevertheless, the allusion will serve to show how very closely acts of apparent kindness trespass upon the threshold of actual ill-treatment.

It is with the harsher and more pronounced evidences of cruelty that we have to deal—evidences which are constantly coming within observation, whether we acknowledge or ignore their presence.

Now that your attention has been specially directed to this subject, you will call to mind instances of undoubted cruelty that have not cost you more than a passing thought ; indeed, cases so oft repeated as to leave the impression that no cruelty at all existed. So much for thoughtlessness, apathy, and habit !

It would be interesting to ascertain how few of the European and native population of India know of the existence of Societies for the Prevention of Cruelty to Animals : probably not one per thousand of the former, nor one per million of the latter.

It is my duty, therefore, to inform you that there are several societies in this country ; that the Calcutta Society was formed in 1861, and is under Viceregal patronage ; that the Act for the Prevention of Cruelty to Animals has been extended to places in ten districts of Bengal, the city and suburbs of Calcutta, and that certain other and similar legislative enactments have been extended to about twenty-nine towns in Bengal, and to upwards of two hundred in the North-West Provinces, Central India, Hydrabad assigned districts, Oudh, the Punjab, and British Burmah ; that Bombay possesses a society, formed in 1874—with a branch at Karachi, started in 1878—under the patronage of the Lieutenant-Governor, and that during 1877 societies were established at Madras and Bangalore. Branches of the Bombay Society are being established at Ahmedabad and Surat in great measure through the exertions of native gentlemen.

The aim and object of these societies, wherever constituted, are the same, their special mission being the prevention of cruel and improper treatment of animals, and the amelioration of their condition generally throughout India.

The means to this end are :—Firstly, The agency of paid European officers, whose duty it is to watch, warn, and caution, or prosecute if necessary, all persons found guilty of inhumanity to animals.

Secondly, The distribution of printed papers in Bengali, Oordoo, Marathi, Guzrati, and the English language, warning the heartless, instructing the ignorant, and providing all with information and useful hints respecting the treatment of their dumb labourers.

Thirdly, The circulation of papers in English amongst the European and educated native community, furnishing information as to the law throughout India, and the means at their disposal for punishing the wantonly cruel, and holding a check upon brutal inhumanity.

Fourthly, Inviting information and suggestions from all who are interested in the cause of civilization throughout India, respecting any barbarous practices, whether arising from carelessness or ignorance, over which these societies may be thought able to exercise any influence towards the

improvement of the treatment and condition of labouring and domesticated animals.

Fifthly, The introduction into schools of books and tracts in English and the vernacular, calculated to impress on youth the duty of humanity towards the inferior animals.

Sixthly, Seeking the aid of the pulpit, the press, and all public instructors, in advocating the principles and objects of these societies having in view the promotion of humanity towards the animal creation.

The important share and influences these societies exert in the education of the people, in the cultivation of those merciful impulses which tend to the growth of humanity, cannot well be overrated.

The Bishop of St. David's, London, in his address at the annual meeting of the Royal Society for the Prevention of Cruelty to Animals, said, he "looked at that society as instituted not merely for the purpose of protecting the brute creation from wanton cruelty, but also as constituted for the purpose of protecting human society from the manifold evil effects which result from the indugence of habits of cruelty towards animals."

To the accomplishment of these praiseworthy ends, the moral support and co-operation of every community are not less sought than its pecuniary aid, to meet the expenses incidental to the Societies' operations, the extent and utility of which, in a field so wide, can only be limited by the extent of means at their command.

The result of the Calcutta Society's operations during the year 1881 is as follows :—

Number of prosecutions	3,887
Number of persons convicted	3,780
Number of persons warned and discharged	118
Number of persons discharged for want of proof ...	10
Equine animals subjected to cruelty	1,123
Bovine „ „ „	3,224
Porcine „ „ „	2
Wild birds and poultry „	935
Total	5,284

Result of the Bombay Society's operations during 1880 :—

Number of prosecutions	1,420
Equine animals subjected to cruelty	263
Bovine „ „ „	1,157
Animals relieved by Society's influence	1,577
Persons cautioned by magistrate	55
Persons warned by Society's agents	99
Private individuals prosecuted	36
Notices served on the Bombay Municipality	24

Out of upwards of 9,000 bullocks employed in Bombay, prosecutions were instituted for cruelty inflicted on 1,157 ; certainly a very high per centage.

Branch at Kurrachi—1878 *to* 1881.

Number of convictions	571
Cases in which convictions were not obtained	15
Number of animals relieved by prosecutions, including horses, ponies, donkeys, bullocks, and camels ...	800

Hundreds of animals in an unfit state for labour are temporarily put out of work on the Society's representations : and many are sent to the Cutch Bhooj grazing grounds.

In 1880 this useful institution, for want of an energetic secretary and agent, suspended work for two months, but afterwards resumed operations.

The Pinjrapole.

There is an endowed and wealthy institution in Bombay, established in 1834, called the "Pinjrapole," used as an asylum for sick, weakly, disabled, and stray animals, of which it sometimes contains over three thousand.

There being insufficint accommodation in the Bombay pinjrapole, a branch was started at Chemboor, in 1844, and another at Bhewndy, near Sallsette, in 1864. In 1832 the East India Company made a regulation to kill annually the dogs on the Island of Bombay, and quarrels having frequently arisen between the Company's sepoys, and the Hindoos and Parsees (ryots)—the act of killing animals, undeservedly as they termed it, being inconsistent with their religion—several petitions protesting against the practices, and requesting prohibition thereof, were forwarded to Government, but to no purpose.

Subsequently Government withdrew the regulation on condition that the petitioners would catch the dogs alive, and send them to other parts and places.

Under able and influential direction, proper arrangements were made for catching, keeping, and feeding dogs and other stray animals, for whose shelter suitable buildings were erected, the whole cost being defrayed by subscriptions and fees levied—under agreement—on certain mercantile commodities, in which Hindoo and Parsee mahajuns dealt.

And it was agreed that this charitable institution should be maintained as long as the Island of Bombay existed. As the funds of the institution accumulated they were invested in landed and house property, Government notes and shares, which may now be valued at ten lacs and thirty-four thousand rupees.

All this property and estate is held under a deed of trust for the benefit of the Bombay pinjrapole and its branches.

In consequence of most of the trade having passed into the hands of the European and Mahommedan communities, the income accruing from fees levied has so much diminished, that were it not for the estate and funds, the institution could hardly maintain such an enormous number of animals.

The Hindoos regard the act of killing animals as a heinous crime (though short of this they stay not their hands at any cruelty), and the rescuing them from persons who would kill them, or from slaughter-houses, an act of charity and merit.

Wherever and whenever they could find animals of any kind placed in such predicament, they would buy and send them off to the pinjrapole to be taken care of and fed.

Although established primarily for the purpose of keeping and feeding dogs and other stray animals, the pinjrapole receives such as may be sent there under circumstances of rescue from slaughter, to please and respect the feelings of certain sections of the Hindoo community, which give the largest contributions to the funds of the institution.

The present annual income, consisting of rents, interests, and dividends, amounts to about one lac of rupees, which is wholly absorbed as follows :—

Feeding animals	50,000
Establishment	21,000
Donations to similar institutions in the mofussil ...	25,000
Repairs	4,000
Total Rs.	1,00,000

Number and description of animals in the pinjrapole on the 18th May 1882 :—

Bullocks and cows	1,652
Buffaloes	93
Horses and ponies	199
Donkeys	6
Goats	249
Deer	1
Pigs	169
Dogs	213
Guinea pigs	16
Hares	4
Europe rats	3
Cats	18
Monkeys	10
Porcupines	2
Parrots	4
Poultry (Gallinaceous)	592
Geese	5
Ducks	120
Partridge	7
Total	3,363

Notwithstanding that this institution has objects in view, which, if not identical, are in close sympathy with those sought for by the Bombay Society for the Prevention of Cruelty to Animals, the latter, in 1877, found it necessary, and did not hesitate to report honestly upon the working of the former ; pointing out the serious defects of the buildings, cages, and hospitals ; objections in the modes of securing and confining animals ; neglect and ignorance in their management in health and treatment in disease ; disregard of sanitation ; the loss of labour and income attendant upon not utilizing animals that were perfectly healthy and fit for work ; the "cruelty" attending the capture of dogs ; the "absolute cruelty" resulting from the manner in which birds were boxed up, and the "refined cruelty" imposed by keeping (alive, I presume) animals whose sufferings were most acute, and condition deplorable from emaciation and disease, no attempt being made to treat them properly for their complaints. The Society's suggestions for improvement were sound and well received, the trustees promising to carry them out gradually.

Whether this has been done, I do not know ; at all events the pinjrapole is a gigantic and excellent asylum, but, backed up with its enormous income, it might be made more humane, and accomplish much more good for dumb animals and man than it does, if worked under an improved and more intelligent system.

I have been unable to elicit any information from the Madras Societies, my letters remaining unanswered.

The phraseology of the law for the prevention of cruelty to animals is comprehensive, and most of the prosecutions are instituted under the first five sections of Act No. 1 of 1869, which says :—

1.—That the word "animal" shall be taken to mean any domestic or tamed quadruped or bird.

2.—That every person who shall cruelly and wantonly beat, ill-treat, abuse, torture, overdrive or overload, or cause to be beaten, ill-treated, abused, tortured, overdriven or overladen, any animal, shall be liable to a fine which may extend to Rs. 100.

3.—Any person who shall incite any quadrupeds or birds, whether domestic or wild, to fight, or shall bait any animal, or shall aid or abet any one in so doing, shall be liable to a fine which may extend to fifty rupees.

4.—Every person who shall wilfully and knowingly permit any animal of which he may be owner to go at large in any public street, road, or thoroughfare, while such animal is affected with contagious or infectious disease, or shall wilfully permit any diseased or disabled animal, of which he may be owner, to die in any public street, road, or thoroughfare, shall be liable to a fine which may extend to one hundred rupees.

5.—Every person who shall employ or cause to be employed, in any work or labour, any animal, which, in consequence of any disease, infirmities, wounds, or sores, is unfit to be so employed, shall be liable to a fine which may extend to fifty rupees.

These are the main points of the Act, but the Local Governments have the power to extend it to any city, town, station, bazaar, cantonment, village, district, or portion of a district.

From inquiries made, I glean that the exercise of this legal power has not been carried out extensively. The influence of the Act is limited to a very small area compared with the size of the country.

I could wish, and every humanitarian will agree with me in the expression, that the power of the Act should be made to exert its undeniably good intervention in every corner of the peninsula.

Act 3 of 1869 empowers police-officers to arrest, without warrant, any persons committing, in their view, an offence against the aforesaid Act.

Two clauses in the Calcutta Suburban Act, No. 2 of 1866, though not framed with humanitarian views, are not the less operative to that end: the prohibited offence is "driving a hackney or cart with insufficiently greased wheels," and the penalty is a fine not exceeding Rs. 50.

This provision is not only a remedy against a nuisance, but mitigates a great amount of needless and painful labour.

The General Police Act, No. 5, which has been extended to over 200 places on this side of India, renders liable to arrest without warrant, a fine of Rs. 50, or to imprisonment, "any person who wantonly or cruelly beats, tortures, or abuses any animal."

The "Stage Carriage Act," No 16 of 1861, continues in force, section 11 thereof declaring that "any person who shall cruelly beat, ill-treat, overdrive, abuse, torture, or cause or procure to be cruelly beaten, ill-treated, overdriven, abused, or tortured, any horses employed in the drawing, or harnessed to any stage-carriage, or who shall harness to or drive in any stage-carriage any horse, which from sickness, age, wounds, or other cause, is unfit to be driven in such stage-carriage, shall for every such offence be liable to a fine not exceeding one hundred rupees."

The attention of all residents and travellers throughout India is earnestly invited to the power thus placed in their hands to protect those who cannot protect themselves from cruelty: and it is hoped that the *will* to carry this humane duty into effect whenever opportunity offers may not be set aside because of the trouble and inconvenience informants may occasionally be put to.

If the traveller who wrote to the *Civil and Military Gazette*, on the 29th April last, on the cruelty inflicted on the Tonga Service ponies between Rawul-Pindee and Murree, had been acquainted with this law, he would have known how to have acted.

He says: "The weak and wretched state of some of the ponies is disgraceful, the backs and shoulders of many being badly galled by the wretched ill-fitting harness."

This is the condition of many ponies on other dâk lines, especially where natives are the proprietors.

Government is the best proprietor of dâk lines, and so far as the ponies are concerned on the Umballa and Simla roads, I consider they were in the middle of April in a most creditable condition.

With the extension of railways, there will, of course, be a corresponding decrease of the kind of cruelty just noticed, but whilst it lasts, its perpetrators should meet with the punishment the law prescribes.

The enactments alluded to, and some to which I shall not refer, provide for all manner and kinds of cruelty of which you have no conception.

The Germans have a pledge containing a declaration for adults or protectors, and another one for children ; the former runs thus : "The undersigned hereby enter the above-named society, and promise to do all in their power for the protection of animals from the infliction of illusage, and to encourage kindness towards them in the minds of all those, especially the young, over whom they can exercise any favourable influence."

The latter runs,—"We the undersigned children enter the 'Great German Covenant for the Protection of Animals,' and pledge ourselves by our signatures never in our lives to ill-use any animal, great or small, and also wherever and however we can to prevent others from doing so."

As I said before, the phraseology of the law is comprehensive enough, but its application is not sufficiently extended, or pushed where it does apply.

The subject under notice may be studied from a moral, legal, humanitarian and veterinary point of view, and this I propose to do in the combined form, rather than under separate heads, for the sake of brevity and simplicity.

The legal and otherwise accepted meaning of the word "cruelty" may be defined as the infliction of pain without justifiable cause.

The application of the law to each specific case is a matter for the judicial discrimination of the magistrate, but the evidence to enable him to decide is, in many cases, incomplete without the testimony of the veterinary surgeon ; for which reason the subject of the prevention of cruelty to animals becomes an important branch of veterinary jurisprudence.

The veterinary surgeon is usually called upon to speak as to the existence of pain, its kind, intensity and duration, and his opinion is sometimes asked as to the justification of undoubted pain ; for instance, in regard to operations said to have been performed either for the good of the animal or for the welfare of mankind.

In India this professional testimony is not always forthcoming, but wherever available it is wisely sought and gladly given.

The very large proportions of convictions, compared with prosecutions, show very clearly how self-evident such cases of cruelty must have been, and I do not think we can question the equity with which the penalty of the law has been administered.

In a vast Empire like India, which is stocked with more classes of domesticated animals than any other country in the world, and where the moral apathy and callousness of the natives to the sufferings of animals are proverbially true, notwithstanding that some kinds of creatures are regarded by them with a certain kind of sacred sentiment of veneration, it is obvious that infringements of the law must be exceedingly numerous, if not altogether incalculable.

But it would be unpardonable of me to cast all the stones at the natives, because we live in the same kind of glass-house, and cannot afford to be other than discreet in laying our accusations.

Though we have a natural aversion to the careless and wanton infliction of suffering, brought to this righteous way of thinking by the exercise of higher intellect than the native—in fact, educated to it both morally and religiously, all our lives—we Europeans cannot conscientiously and entirely exonerate ourselves from all blame.

At the same time I cannot exculpate the Anglo-Indian resident and traveller from wilfully and directly causing unnecessary pain to the brute creation, partly because certain facts, to which I shall presently refer, do not strike him as acts of cruelty, and partly because of the ignorance which prevails as to the natural constitution and capabilities of animals. Indeed, how many of us treat them as mere machinery, caring little or nothing whether they tire by distance, pace or weight imposed upon them, irrespective of their condition, the state of their limbs from lameness, or their bodies from galls, wounds and disease.

Take, for instance, the dâk or stage-carriage horses, and here we find oft-recurring examples of the infliction of unnecessary pain from overloading and overdriving, both when fitted and unfitted for work.

I have travelled over most of the dâk lines on this side of India—not in the casual manner the ordinary traveller does, thinking only how rapidly he can cover the distance, or how much baggage he has stowed away—but in the exercise of special duties connected with the well-being of dâk horses, and have often observed overloading to be one of their chief grievances, for which the passenger is invariably responsible, and to be blamed. He it is, too, who, tempting the coachman with an extra rupee, forces the pace beyond the bounds of regulation, reason, and humanity.

The rules framed by those whose humane duty it is to arrange matters concerning dâk horses are explicit: they are printed, and pointed out by responsible officials, whose protestations against overloading are often overruled.

Passengers are enjoined to adhere to those rules which have been laid down in fairness to owners, for the benefit of the travelling public, and for the good of a class of animals whose life, at the best, is hard and wearisome.

Then, again, travellers are in the habit of putting themselves up to auction where several companies ply on the same road, and travel by the cheapest agency. This uncommendable course, of necessity, throws inordinate work, and leaves its mark very palpably, on a certain lot of ponies which generally are, or soon become, the least able to bear the strain, and are by-and-by brought into an unfit state for work, and if worked then, cruelty must be inflicted.

Where a line is monopolized by Government or by a private individual, there can be no question of beating down the fare: in the case of three companies working on the same road, it has been found necessary, for many reasons, to fix the same rate for each agency, and if agents are discovered running their dâks for less, their licences are suspended or cancelled.

The magistrate has the power to inspect the agent's books, in which the traveller is expected to vouch that he has paid the full fixed fare. As licences are suspended the inference is patent.

From what has been said, it will be seen that we are individually concerned, unconsciously and indirectly though it may be, in perpetrating—aiding and abetting as the law terms it—acts of cruelty on animals, and when we further contemplate what are the results of overwork, viz., lameness, gallings, wounds, rapid loss of condition, exhaustion and even death, we cannot but feel surprised at our hardness of heart.

I shall now direct your attention to the more common and patent forms of cruelty, some of which come within our power to prevent or suppress: they may appear insignificant, indeed, may not be recognised as such until I point them out. Lameness in forty-nine cases out of fifty is due to pain. The fiftieth may not be, but to some mechanical cause, such as some kinds of anchylosis or stiff joints, or where a displaced bony prominence has limited or altered the action of muscles attached to it, both causes giving

rise to uneven gait, more inconvenient and uncomfortable than painful in its nature.

The precise cause of lameness is occasionally very obscure and difficult to trace, but failing to find any mechanical reason, it must be concluded—as a rule—that pain exists somewhere, and, of course, the more intense the pain, the more severe the lameness, and the less fitted for work is an animal, which, if worked in this state, is subjected to unnecessary suffering.

A horse is often very lame at starting, which apparently passes off in a short time—when he warms to his work, as the expression goes. As long as the lameness lasts he must be in pain, and we are not justified in saying that pain has ceased, though there is an apparent freedom from it as long as he is kept going.

Our dumb patients do not mislead by shamming, and a long experience has clearly proved to me that lameness invariably arises from pain, a cause for which can generally be found, if looked for, and removed by rest and treatment.

In all Indian cities, stations, and villages, and on all our roads, animals are constantly ridden and driven, and otherwise worked in a state of lameness : it may not be severe, but it is painful, and therefore cruel.

I may be expected to define between lameness which can be justifiably worked, and that which cannot.

This I could not here attempt in justice to the animal, but should require the example before me for decision.

It may, however, be accepted as a maxim that lame animals are all the better for not being worked, and that to work such is cruel.

Horses deemed unfit for work in the army, owing to incurable lameness, or to other maladies, are now, more than formerly, considered unfit for work elsewhere, and, on the score of humanity, are destroyed ; than which I cannot conceive a more humane end to the life of the aged, worn-out, or incurably lame troop-horse.

Scarcely a day passes without our being brought face to face with evidences of cruelty to lame animals ; some are compelled to work, whilst others are forced about the grazing-grounds to pick up a living they would perhaps not otherwise obtain : for instance, cattle, sheep, and goats suffering from a disease which affects their feet, and in which movement produces the most excruciating pain ; various animals whose unprotected hoofs have been worn to the quick on metalled roads, or whose feet have been punctured in shoeing, or permitted to grow long and more horn-like than hoof-like ; ekka, dâk, and gharry horses, with all kinds of permanent and temporary infirmities of their limbs ; donkeys with the same, and especially with distorted limbs, due partly to their being worked and over-weighted at too young an age, and partly to starvation : polo-ponies whose legs, joints, and feet have suffered considerably from the disastrous effects of pace, weight, sharp-turning, and concussion ; racehorses broken down with constant training and running, patched up, and again brought out in the hope of scoring just another win ; horses with cracks in their hoofs, through which the blood is oozing ; camels with sore feet, enlarged joints, and pads ; sacred bulls, whose hoofs have grown so long from disuse, owing to rigorous confinement and neglect, that they could either not walk at all, or only do so on their knees, and incapacitated by other distortions and injuries, even with a broken limb. The exigencies of war sometimes compel the enforced marching of sick and lame animals, but here the cause, to a certain extent, is, perhaps, justifiable. The alternative is, of course, abandoning such animals, which should always be destroyed, and not left to die, and to be partly devoured whilst still living.

(To be continued.)

THE PRACTICAL MAN

THE old-fashioned "practical man" has of late been falling into the rear. We still, of course, have our practical men; indeed, they are in greater request than ever, but their practicality must now be based on theory, and theory was just what the olden type despised above everything. Not such a great while ago, the practical man was everywhere recognised as one whose doings were directed, not by any kind of new-fangled reasoning, but by the light of actual experience. Such men are still to be found, but they are getting comparatively scarce. They are still, however, sufficiently prominent to make every one familiar with the type.

The practical man is a person who prides himself on his hard head and strong common sense, and makes it his boast that he actually does what your mere theorist can only talk about. The old-fashioned farmer presented on the whole the most interesting specimen of the kind. Most middle-aged persons can remember some sturdy old soul who used to wax wroth at the bare idea of rotation of crops or artificial manures. From boyhood upwards such a man would have been accustomed to regard the periodical lying fallow as indispensable to successful farming, and for mere scientific theorists to pretend to show how the fallow might be dispensed with was very much like pretending to show how a man might do without his periodical sleep. The fallow had come to be regarded as an ordination of Nature, endorsed by a lifetime's experience. The necessity had been practically tested, and for mere theorists to question that necessity, and to attempt to prove on the strength of chemical analyses of soils and plants that land might be cropped continuously, was absurd. Even though it promised a considerable addition to the capabilities of a farm, there were many worthy cultivators of the soil who could not for a long time believe in it, and who refused to budge out of the rut which practical experience had proved to be the proper one. It was very much the same in the matter of artificial manures. The proper thing had always been to utilise the refuse of the stable and the farmyard, and to this day there are many farmers who refuse to put any faith in the "jimcrack" productions of the chemist. Even guano they look at askance; and as an illustration of bucolic prejudice, may be mentioned the observation of a veteran agriculturist, who the other day was heard peevishly to complain that potatoes had never been free from disease since guano was introduced. For a great part of a lifetime he had been accustomed to the use of ordinary farm manure, and, as a practical man, he had never been able fully to reconcile his mind to anything that scientific theorists had foisted on the market.

The hard-fisted, hard-headed, practical man was at one time decidedly on the stronger side in any public controversy between the practical and the theoretical, popular sympathy being strongly in favour of the man of deeds as opposed to the man of mere argument, especially of learned argument. Most persons can recall some droll story, some clever skit that has done yeoman's service in its day in the great battle of theory and practice. Who, for instance, has not heard the story of the profoundly-learned savants who set about to decide the course of an underground current? It went into the earth here; the question to be decided was where did this particular stream come out again? After an immense amount of investigation and discussion of geological strata, relative levels, volume of water, and so forth, science came finally to the conclusion that this stream could not possibly be identified with one that emerged on the other side the hill. A rustic native of the locality, however, stoutly maintained that they were one and the same stream, and he put the savants to shame by throwing a turnip into the current on one side the hill, and letting them see it come out on the other. The story has taken two or three different forms, and probably is but a fiction; but it was one of

a kind very common a generation ago when there was no more ready or certain method of raising a laugh in any assembly than by some incident in which "practical common sense" put scientific theory to the rout. The famous archæological inscription which turned out to be "Bill Stump, his mark," was conceived in just this spirit of mischief towards the theoretical and speculative as dissociated from the actual and practical.

People of the type we are considering are not, as a rule, particularly pleasant. Their repugnance to mere theory is equalled usually by their contempt of sentiment and mere matters of taste. If they build a house their "sound common sense" will tolerate any degree of ugliness, provided only it comes up to their standard of convenience. If they plant a garden, it will be mainly with pumpkins and potatoes, and in dress they will be ruled by considerations of what is serviceable alone. Such a man will marry a woman for her skill in pudding-making, and will educate his children strictly with a view to their getting their living. In conversation his style is similarly characterised by the plain and the practical. He is fond of what he calls plain speaking, and never fails to put a disagreeable fact in the most disagreeable light, not from any intention of doing so, but because the baldest and plainest light is the only one that occurs to him, and that usually happens to be the most disagreeable. The truth is, your practical man is usually a very good fellow, spoiled for want of a slight infusion of the ideal in his composition. That which he cannot see, and of which he has had no experience, he is unable to imagine. Sensibilities which he does not himself possess, or which he has never had badly wounded, he cannot understand in another, any more than he can conceive of any sound argument apart from palpable facts. His nature is bounded by what is evident to his senses, and science and its theories make more or less of a demand on his fancy—hence his distrust of it. He is being compelled by the sheer force of facts to recognise in every department of life that there is something in scientific theories, aud that theorists are not necessarily unpractical, while the world at large has long begun to discover that his rule of thumb is behind the times, and that he must either be content to fall to the rear of things or brush up a little.—*The Globe.*

FELLOWS' DINNER.

THE annual dinner of Fellows of the Royal College of Veterinary Surgeons will take place on the opening day of the Royal Veterinary College, at Anderton's Hotel, Fleet Street, London, E.C. Notice of intention to attend may be forwarded to R. Ward, Esq., 1, Dudley Place, Paddington, W.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL HELD JULY 31st, 1882.

GEORGE FLEMING, Esq., President, in the Chair.

Members present.—Profs. Brown, Pritchard, Simonds, Robertson; Messrs. Cartledge, Anderton, Broughton, Wragg, Dray, Santy, Whittle, Greaves, Woods, Taylor, Blakeway, Batt, Perrins, Cox, Simcocks, Simpson, Sir F. Fitzwygram.

On the motion of Mr. DRAY, seconded by Mr. TAYLOR, the minutes of the last meeting were taken as read.

The SECRETARY read the notice convening the meeting.

Letters were read from Messrs. Cartwright, Reynolds, Walley, and Harpley, expressing regret at their inability to attend the meeting.

The following presentations by Prof. Voelcker were announced : (1) "On Manure Experiments," (2) "Annual Report as Consulting Chemist," (3) "On Field and Feeding Experiments."

Mr. TAYLOR proposed and Mr. DRAY seconded, a vote of thanks to Prof. Voelcker for his presentations.

The resolution was agreed to.

The SECRETARY stated that he had obtained the solicitor's opinion with regard to the use of the crest of the College by members of the College. The solicitor stated : "No person, whether a Member of your College or not, has a right to use the armorial bearings, crest, or motto of the College, without first paying the usual duty, and in this view I am supported by the Inland Revenue Authorities at Somerset House."

Professor SIMONDS, as the Chairman of the Presentation Committee, asked the Council to accept the portrait of Sir Frederick Fitzwygram, which was a duplicate of the one presented to that gentleman. He considered that great honour had been done to the Council by Sir Frederick's kindness with regard to this matter. He suggested that it should be placed in the College, and he hoped that it would be carefully retained so long as the College existed. Some day or other it might grace a hall belonging to the Royal College of Veterinary Surgeons, and be placed side by side with the portrait of the first President.

The PRESIDENT said he was sure the Council would accept the portrait with feelings of gratitude to General Fitzwygram, and that it would be valued and preserved as long as the College existed.

The notice of motion by Prof. Walley with regard to the examinations was ordered to be suspended.

The following reports were read : (1) Report of the Fellowship Examination ; (2) Report of the Court of Examiners ; (3) Report of the Finance Committee.

Cheques are ordered to be signed in conformity with the recommendations of the Finance Committee.

The report of the Examination Committee on the Matriculation Examination was taken as read.

A letter was read from Professor Walley, in which he drew attention to the fact "that the Certificate in General Education of the Pharmaceutical Society is not included in the Lists of Examinations for the Matriculation Examination."

Professor SIMONDS said it appeared to him that the report of the Matriculation Examination Committee would require very deep consideration on the part of the Council. The first point in it to which he would draw attention was that they had fixed January, 1884, as the date in which the scheme should come into operation. If that were so, all students entering the colleges after October next would be subject to it. He considered that the date was much too early, for the scheme seemed to create almost a revolution in the regulations. The College had only lately obtained an Act of Parliament by which they became a legalised body, and they had power under that Act to register existing practitioners. There could be no doubt that the relatives of these existing practitioners would hereafter become veterinary surgeons. They could only do so by entering one of the schools and passing the Matriculation Examination as now instituted, or as proposed to be instituted by the scheme. Did the Council think that these young men would be in a position to pass such an examination as the scheme proposed at so early a date? Many of the existing practitioners were people of straitened means, and the education which they had been able to give their

sons was not such as would enable the young men to pass the examination. He therefore recommended that the scheme should be postponed until a later date, even as far forward as 1887. He also suggested that an alteration should be made with regard to the certificates received from the College of Preceptors. He spoke with some amount of experience on this point. It should be borne in mind that it was the Royal Veterinary College which originally instituted the Matriculation Examination, and it was only due to that institution to state that from year to year it had gone on making that examination more and more stringent. It was now many years since it placed the examination in the hands of the College of Preceptors, but there were very few candidates who were able to bring with them higher certificates than those of the third degree. He did not remember that there had ever been one candidate who had presented a certificate of the first degree. He therefore thought it would be advisable to strike out the word "first," and substitute the words "second and third." He presumed it was not the object of the Council to limit the number of students who entered the several colleges, as its income was derived from the students. The object should be to encourage as many of them as possible to enter the schools, and that could only be accomplished by making the admission as little stringent as possible consistent with propriety. He was one of those who thought that the Royal College of Veterinary Surgeons was placing itself in a somewhat difficult position by meddling with the Matriculation Examination. It should be borne in mind that the schools were perfectly independent of the Council. In Scotland they might be considered as private institutions, and the London College was under the government of a number of gentlemen unconnected with the Council of the Royal College of Veterinary Surgeons. The Council might therefore render itself liable to an injunction for loss of revenue by the schools if they insisted on a particular matriculation examination. So far as he knew, there was no warrant for such a course in either of the charters, and in fact the recommendation of the Committee would permit every school to adopt exactly what kind of examination it pleased. It was well known that there was at the present time a lower standard in some of the schools than in others, and yet the recommendation of the Committee tended to perpetuate that abuse. The only reason for meddling with the examination at all must be to put all the schools on the same level, but the report did not tend in that direction. It appeared to him that if the Council had power to interfere with the Matriculation Examination, the same questions ought to be submitted to all the schools at the same time, with the same examining board. If there must be an examining board in Scotland and another in England, there should be an agreement between them as to the questions to be submitted. He objected to English history and geography being included in the subjects of examination, because the experience of the London school was that many men, who had a fair knowledge of Greek and Latin, were not acquainted with English history and geography. He would therefore move that the report be referred back to the Committee for reference.

Mr. SIMCOCKS seconded the motion on the ground that the 5th clause of the first paragraph was unnecessary and contradictory. He, however, entirely dissented from the doctrine laid down by Professor Simonds, that the Royal College of Veterinary Surgeons had no right to control the Preliminary Examination. To his mind the prosperity of the schools was a secondary matter compared with the advancement of the profession. There could be no doubt that up to the present time the Preliminary Examination at some of the schools had been little better than a farce. He had seen instances in which candidates had passed, though words were incorrectly spelled all through their papers.

The PRESIDENT explained that the 5th clause was inserted by the Dean of the College of Preceptors. At a meeting last year the Council decided that the report should be referred to the Dean for his opinion. The Dean had been only acquainted with the examination of the Royal Veterinary College, and therefore, perhaps, he thought that the examinations were similar in the other schools. It was evident that the 5th clause would altogether annul the efforts of the College to raise the standard of the profession. With regard to the power of the College to seek for an examination of this kind, the matter had been referred to the highest legal authority in the country—the present Attorney-General—and his opinion was that the College had the power. The necessity for a uniform Matriculation Examination had been apparent to the profession for years. Of all the legalised professions in this country the veterinary profession was the most illiterate. The standard of education had been, and was now, of the lowest description, and until they demanded a respectable amount of education from those who aspire to enter their ranks, they could never attain the position which they desired. It was evident that the schools could not, or would not, take the matter in hand. The Royal Veterinary College had been compelled to reduce its examination to a very low standard in order that it might not suffer by competition with some other schools. It was therefore imperative for the Royal College to take the matter in hand, and it would be a disgrace to them to allow it to stand over any longer. He was convinced that in the profession the feeling was unanimous that a Matriculation Examination should be instituted by the College. It might at first be of a mild description, but it must rise with the times. No complaint could be made with regard to the expense of education now-a-days. With regard to extending the period at which the test was to be applied, in order to benefit the existing practitioners, he thought that those practitioners had been very generously dealt with, and the profession could not be expected to stand still in the matter of education until those practitioners had educated their sons up to a proper standard.

The resolution to refer the report back to the Committee was carried.

Professor SIMONDS suggested that the points to be reconsidered were the following :—Clause II., relating to the certificate of the College of Preceptors, should be altered. The Committee should prepare a scheme for making the examinations uniform in all the schools. Clause V. should be reconsidered, and also the obligatory subjects, so far as English and Geography were concerned, and the date when the scheme should come into operation.

Mr. TAYLOR asked Professor Simonds if he considered that the Council had the power to regulate the Matriculation Examination.

Professor SIMONDS said his opinion was that the Council had not the power.

Professor BROWN said the Attorney-General was rather vague in his opinion, which contained no positive statement that the Council had power to regulate the Matriculation Examination for admission to the schools.

The SECRETARY read the Report of the Parliamentary Committee.

On the motion of Mr. DRAY, seconded by Professor BROWN, the report was received.

Mr. TAYLOR proposed that before any action was taken in the direction of applying for a supplemental charter, the draft should be sent to every member of the Council.

Professor SIMONDS seconded the motion, which was agreed to.

On the motion of Mr. COX, seconded by Mr. CARTLEDGE, Messrs. Fleming, Collins, Duguid, and a Member of the College of Preceptors were reappointed Examiners for the Fellowship Degree.

Nomination of the Board of Examiners.

The PRESIDENT said he thought it would be advisable, if possible, to have one Examining Board for the two kingdoms, as that was the only way in which uniformity of examination could be secured. He therefore advised the Council to keep that point in view in their nominations.

Mr. CARTLEDGE said that such a course would exclude such Examiners as Professor Voelcker and Dr. Burdon-Sanderson, who would not go to Scotland.

Professor BROWN said there was a difficulty about the appointment of a single Board. From time to time there had been applications from Scotland and Ireland with regard to the establishment of separate Examining Colleges for those countries, but the reply had always been that under the present system there was a Board, or a portion of a Board, for Scotland, and the Council was prepared to make similar arrangements for Ireland. Only a few weeks ago a movement was set on foot in Dublin for the old object.

The PRESIDENT said that considerable inconvenience was frequently caused by the non-attendance, at the fixed dates, of the Examiners who did belong to the profession, and it was a point for consideration whether only such persons should be nominated as would be certain to attend the examinations on the appointed days.

Mr. GREAVES considered that the time had arrived when the Examining Board should be confined to veterinary surgeons.

Sir F. FITZWYGRAM thought that if only one Board was appointed for England and Scotland, some of the best Examiners would have to be excluded, because they could not travel from one country to the other. Besides that, the expense would be largely increased. He was himself in favour of a joint Board, and he would suggest as a compromise that there should be separate Boards for the first and second examinations, but only one Board for the final.

The PRESIDENT said his experience was that the feeling of the profession was almost unanimous in favour of the examinations being conducted by members of the profession. It was a strong reflection upon them that they were obliged to appeal to other professions for examiners.

Mr. ROBERTSON considered that it would be acting on a wrong principle altogether to confine the examiners to members of their own body. Their object should be to get the men who were most capable of doing the work. He would propose that separate Boards should be nominated for the first and second examinations, and a joint board for the final.

Mr. TAYLOR seconded the motion, which was agreed to.

Sir F. FITZWYGRAM said it would be a retrograde step to say that they would take an inferior man simply because he belonged to the profession.

The following gentlemen were nominated as Examiners for England: Prof. Voelcker (Chemistry); Mr. F. Dun (Chemistry); Prof. Bentley (Botany); Mr. Walters (Botany); Mr. F. Dun (Materia Medica); Mr. Vaughan (Materia Medica); Dr. Burdon-Sanderson (Physiology and Histology); Mr. Fleming (Anatomy of the Horse and Physiology); Prof. Pritchard (Anatomy of the Horse, and Physiology and Histology); Mr. McGillivray (Anatomy of other domesticated animals); Mr. S. Gamgee (Physiology and Histology).

The following gentlemen were nominated as Examiners for Scotland: Chemistry—Messrs. Crum Brown, Cunningham, and F. Dun; Materia Medica: Dr. Dunsmure; Botany: Messrs. Dickson and Walters.

The following gentlemen were nominated as Examiners for Scotland:—Mr. McGillivray (Anatomy of other domesticated animals); Mr. Vaughan

(Anatomy of other domesticated animals, and Physiology); Professor Turner (Physiology); Professor Pritchard (Anatomy); Mr. Cunningham (Anatomy); Mr. Fleming (Anatomy and Physiology).

The following gentlemen were nominated as Examiners in Class "C" or Final Examination :—Professor Simonds (Cattle Pathology); Mr. Duguid (Cattle Pathology); Mr. Gresswell (Cattle Pathology); Professor Pritchard (Horse Pathology); Mr. Fleming (Morbid Anatomy); Mr. G. Banham (Morbid Anatomy); Messrs. Cartledge, Harpley, and Cox (The Horse); Professor Pritchard (Morbid Anatomy); Mr. McGillivray (Cattle Pathology; Mr. Rutherford (Cattle Pathology); Professor Mayer (Pathology and Surgery of the other domesticated animals); Mr. Alexander Robinson (Cattle Pathology).

The SECRETARY was instructed to send a fly leaf containing the names nominated with the notice calling the next meeting.

The REGISTRAR read the Obituary List.

The SECRETARY read the Report of the Committee appointed to inquire into the cases of fraud committed by members of the profession.

On the motion of Professor PRITCHARD, seconded by Mr. DRAY, the report was adopted.

The PRESIDENT :—Gentlemen, is it your wish that the name of Mr. ——— be removed from the Register of the Royal College of Veterinary Surgeons?

All the members of the Council present (twenty-two) voted in the affirmative; and it was ordered that he be written to and informed of the decision of the Council.

The PRESIDENT said that since the last meeting of the Council there was another member of the profession who had been accused of fraud.

On the motion of Mr. ROBERTSON, seconded by Mr. SIMPSON, the Committee were instructed to take the case into consideration.

The SECRETARY read the results of the Fitzwygram Examination, and the report of the Registration Committee.

Mr. SIMPSON proposed that the recommendations of the Report be carried out, and suggested that the words in the memorandum to be placed at the head of the list be altered from "Veterinary Surgery" to "Veterinary Surgery and Medicine."

The motion and suggestion were agreed to, as was also a suggestion by the President that the circulars should only be sent to members of the profession residing within the three kingdoms.

Mr. SIMPSON proposed, and Professor BROWN seconded, "That the recommendation that additional assistance be afforded to the Secretary be agreed to."

The motion was carried, and the proceedings terminated with a vote of thanks to the President.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held at the Great Western Hotel, Reading, on July 14th, 1882. Present :—Messrs. Simpson, Windsor; Rock, Chelsfield; Curling, a visitor, of Rochester; Carter, Guildford; Cawthorn, Hadloe; Barford, Southampton; Martin, Rochester, secretary. In the unavoidable absence of Mr. Fleming, President, Mr. Simpson was voted to the chair.

The SECRETARY read the minutes of the last meeting, and said they would not meet in the December quarter. The Secretary stated that he had

received a letter from Mr. Banham, of Cambridge, as to the expediency of having an annual congress of veterinary surgeons in London. The Secretary said the letter had not been discussed, but he had recived another letter from Mr. Banham in June, which was also read, giving an outline of the scheme, but copies of the scheme had not been received. It was thought the Association could not discuss the matter until they had the scheme before them, but that it was desirable that such an association should be formed, that the Secretary should acknowledge the letters and obtain copies of the scheme and distribute them before the next meeting, so that the subject could be properly considered.

A resolution to that effect was moved by the CHAIRMAN, seconded by Mr. ROCK, and carried unanimously.

A letter of apology was read from Mr. Fleming, the President, who announced that he would read a paper at the next October meeting on "Actinomycosis, a New Transmissible Disease of Animals and Mankind."

The next business on the agenda was for the Secretary to read a paper on the Breeding of Horses.

The CHAIRMAN said they had met not only for discussion, but to visit the Royal Agricultural Show. The paper ought to be read before a full meeting, and fortunately it was one of those things which would keep. Therefore, if it met with their approval, under the special circumstances in which they had met, instead of going on with the meeting he should be willing to ask them whether it would not be better that the meeting should stand adjourned.

Mr. CARTER proposed "That the Secretary be requested to postpone his paper till the next meeting."

Mr. ROCK seconded the motion.

The SECRETARY said he had written the paper for the Rochester Farmers' Club and he thought he would read it at a meeting of veterinary surgeons. It ought to be read at all farmers' meetings to encourage farmers to breed horses, and after what Mr. Mundella had said—that the diseases of cattle had been reduced lower than for the last quarter of a century, and thanking veterinary surgeons for their usefulness to the agricultural interest, the value of which they had considerably enhanced—he (the Secretary) should propose that in order to carry that further, all veterinary surgeons where farmers' clubs are, should use all the energy they could and read papers to show agriculturists that veterinary surgeons were a useful and scientific body. That was why he read his paper upon the breeding of horses. The result of that paper was that they had formed a company, and it was rather important to know that it was well received, and that it would really do some good in their district. He wanted to impress that upon the veterinary surgeons in all districts. The company they had formed was the "Rochester Cart-Horse Society." They had not decided whether they should have a Clydesdale or Shire horse, or both. The object of the company was to keep a cart-horse stallion. The Secretary read the prospectus of the company. Instead of the little weeny pony cart-horses now found, if they could improve the breed of horses they would confer a great boon upon the agricultural interest and enhance the prosperity of agriculturists to some extent. With that view he had read his paper.

Mr. ROCK said that in some districts the landlords bought a good stallion for the use of their tenants.

The SECRETARY said they wanted numbers to take an interest in the matter. Some persons would buy a stallion for themselves. They had good mares, but their difficulty in his district had been to get a good stallion. All their farmers had visited the show, and he thought they were in a fair way of getting a good stallion.

Mr. CURLING related similar experience.

The CHAIRMAN said they were indebted to Mr. Martin for the remarks he had made. There was no doubt that the veterinary surgeon of the future, and indeed of the present, must consider himself no longer a simple machine to go and doctor a sick horse or cow, but he must be an intelligent man who is able to inform all classes of his clients. He must know not only how to attend to a sick horse, but his advice must be sought and his opinion respected on other matters. He must be, in fact, a horse-man, and add a thorough knowledge of stock to other matters. It was with that object that the increased work was put upon the student entering at college, with a view to turning out better men; and they knew how necessary it was that more skill and intelligence should be possessed by those who were in the veterinary profession. He could only say that the attempt of Mr. Martin to bring under the notice of farmers their requirements was a right and proper thing, and he had no doubt that it would succeed. There were good horses about, and many ways of getting good horses. He did not know whether it was the best way to buy two horses at £500, as horses were subjected to all the ills which horseflesh was subject to.

The SECRETARY said they were necessary.

The CHAIRMAN said it was possible to buy one and hire another, and see how the thing went on. They knew things would happen when they were least expected to happen, and if a horse went wrong it would be a bad business for the shareholders or the advocates of the scheme. He did not say that with the view of deprecating the scheme. There was no doubt a very large number of cart-horses in the hands of a few private influential men, and if they could get hold of a horse with a reputation they might possibly put more money into their pockets, and do more good to their Association and their district, because that horse might do better than their own selection. People would run after name, unless the horse came from a good stock or good breeder, and they might be shy of coming to their horse. Let them get as many people to buy mares as they could, and commence breeding at once.

The SECRETARY said they did not want to keep the horse for the winter.

The CHAIRMAN said they would avoid that by hiring. When they had the right horse, they would have so many applications that they must pick the best mares.

Mr. ROCK said that any one letting a horse would limit the number of mares.

Mr. CURLING said the farmers round him would say that if they could not find a horse themselves they would not have him.

The CHAIRMAN said he was looking into the matter from a shareholder's point of view. The horse might have something the matter with him.

A member said he might not get foals.

Mr. ROCK said they might hire with a view to purchase at the end of the season.

The SECRETARY read an extract from his paper stating that a suggestion that Lord Darnley should buy a horse was ridiculed by the farmers.

Mr. ROCK said he congratulated their friends in Kent that after the late depression in agriculture they were in a position to use such words. (Hear, hear.)

The discussion on this subject then terminated.

Mr. ROCK showed a specimen of renal calculus which he had taken from an entire donkey, which he said was under his charge a month or two ago. There were no symptoms, except that it was excessively debilitated, and, generally speaking, had rather pallid membranes, obstinate constipation of the bowels, and almost total loss of appetite. He heard that about twelve months ago the donkey was cast, and the urethral canal laid open, and a

piece of the calculus taken out. After going on some time he felt sure there was more of that material in the urinary organ, and the donkey had got a highly broken-down and diseased condition of the liver ; and he found the whole of the pelvis of one kidney was entirely gone except the cavity which the calculus filled up. He thought it rather a unique specimen, and never saw anything like the quantity in the pelvis of a kidney. The poor thing, without any symptoms to guide one, pined away and died. There was no stone in the bladder. It was a capital donkey, and beat the ponies of the neighbourhood. It belonged to a fruiterer, and it could do more work than the ponies could.

The CHAIRMAN then proposed that the meeting do adjourn.

The SECRETARY proposed that the next meeting be held in London.

The CHAIRMAN suggested that they should have Mr. Fleming's paper then, and the Secretary's paper in the country, as the subject of the Secretary's paper was more of a country one.

It was proposed that the Central Veterinary Medical order should be invited to join them at the next meeting in London.

The SECRETARY proposed a vote of thanks to the Chairman, and congratulated him on being elected a member of the Council, and said he hoped that next year they should have a second member in Mr. Barford. He thought they would run very well together. They had only to be properly organized to show their strength as the Northern Counties do ; they carried whom they selected just as they liked. They united with them in asking them to support their members, and they supported the Southern Counties' member. Mr. Barford told them to run one horse first, and feel their way, and then get two in next time. If they could get two in next time the Southern Counties Association would be properly represented.

Mr. ROCK seconded the motion, and said it was a very rare occurrence that a young society like theirs should succeed the first time of asking. It had shown that there was a feeling abroad that the members of the Council should be distributed all over the country, so that all parties should be represented. It augured well for their organization, and it was a little stimulus to them to have such a distinguished member as their present chairman to represent them.

The CHAIRMAN said he would not detain them with a long speech, but he should be wanting in courtesy if he did not acknowledge the honour which they conferred upon him in selecting him as their member at the College of Veterinary Surgeons, which was a distinguished position and one of some responsibility. He could only say, as their representative, if he could in any way assist in promoting their interests especially, he should esteem it a great privilege to have the opportunity of doing so. As a member of the Council, and representing the profession at large, there was, no doubt, a great deal for any man to do, if he cared to do the work. He had gone into the Council to do as far as he could his part honestly and fairly. They knew there were many matters stirring which required anxious consideration and careful legislation. He assured them they would have his best attention. They spoke of running another horse another year. Of course he should be only too proud to have as a colleague another member of the Association. If they should have Mr. Barford, they would run a gentleman whose name was well known, not only in the immediate neighbourhood, but the country generally, and he thought they could not select a better candidate. With regard to the proceedings of the day, he was much obliged to them for the vote of thanks which they had accorded to him. The duties had been almost nil. He wished that they had had time to have had the paper and had a full discussion. He could only tell them that he felt grateful to them for electing him chairman, and if he were

called upon again, that they would have a fuller attendance and more business to do.

The meeting then ended.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE usual quarterly meeting was held at the Queen's Hotel, Leeds, on Wednesday, the 26th of July. In the absence of the President, Mr. Jas. Freeman, a Vice-President, took the chair; the following members were also present, viz., Messrs. Greaves, Anderton, J. S. Carter, Scriven, Parlane Walker, Lodge, Tatam, B. Smith, Geo. Carter, G. Whitehead, and the Secretary.

Messrs. E. T. Cheesman, 5th Dragoon Guards, F. W. Greenhalgh, and H. Carter were present as visitors.

Apologies for non-attendance were received from Messrs. Dray, Naylor, Ferguson, Joseph and Jno. Freeman, Bowman, Snarry, Peter Walker, Nettleton, Danby, and J. M. Axe.

The Minutes of the previous meeting were read and confirmed.

Mr. Geo. Whitehead, M.R.C.V.S., Batley, was unanimously elected a member.

Messrs. F. W. Greenhalgh, Leeds, and H. Cooper, Huddersfield, were nominated for membership.

The SECRETARY read a letter from Mr. Banham relative to the formation of a Veterinary National Association.

After some discussion as to the provisions of one or two of the projected rules, it was decided to support the formation of the association, and Messrs. J. S. Carter and the Secretary were appointed delegates to act upon the provisional committee.

The subject of the testimonial to Mr. Fleming was introduced, and several subscriptions of one guinea each were announced.

Mr. TATAM gave notice that at the next quarterly meeting he will propose the following resolution: "That the Members of this Society bind themselves to adopt a uniform charge of one guinea for examining a horse as to soundness."

Mr. GREAVES desired to know the opinion of the members as to whether they thought that the time had arrived when the members of the Board of Examiners, with the exception of the chair of botany, should be members of the Royal College of Veterinary Surgeons.

After some discussion, the majority thought that the time had arrived when the proposed change should be adopted.

Mr. CHEESMAN exhibited two singular cases of foot disease; one a case of *Keratoma*, or protrusion of the horny lamine upon the outside quarter of the off fore foot, with a corresponding depression in the Os pedis. The other case was accompanied with lameness, a piece of horny structure about $1\frac{1}{2}$ inch long and 1 inch in circumference being exfoliated from the toe, the case quite recovering.

Some discussion upon the above cases, and also upon the fact that certain horses are doing regular work without shoes, and others with the aid of the Charlier shoe, followed, in which Messrs. Tatam, Greaves, Freeman, etc., joined.

Mr. GREAVES kindly undertook to read a paper at the next meeting upon the subject of Puepura Hœmorrhagica, or Blood Poisoning.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE monthly meeting of this Society was held on the 20th of July, at 10, Red Lion Square. The President, Mr. J. Woodger, jun., occupied the chair; also present were Messrs. J. Atkinson, G. A. Banham, A. Broad, Arthur Broad, A. B. Daniel, G. Fleming, G. Gray, H. J. Hancock, W. Mole, T. Moore, F. G. Samson, H. K. Shaw, C. Sheather, R. Ward, and F. W. Wragg.

Mr. BANHAM, in response to the call of the President, explained to the meeting the details and objects of the scheme for forming a British Veterinary Medical Association.

M. FLEMING said that it was decided at the Congress that an Association, such as the one alluded to, should be formed; he was in favour of the scheme, and thought it would be of the greatest benefit to the profession. He therefore moved that the Society should support the project, for the furtherance of which Mr. Banham had attended the meeting.

Mr. WARD seconded the proposal. He thought a National Association would lead the public to form a higher opinion of the profession as a scientific body, and would be a further means of increasing the unity and good fellowship so much to be desired.

Mr. BROAD said the Association proposed was, in its aim, somewhat similar to the British Medical Association, the meetings and annual gatherings in connection with which were most successful and interesting. He thought the project would be favourably received by the profession, and that the Society should lose no time in giving its assistance.

Mr. Fleming's proposition was then put to the meeting by the President, and carried unanimously; and Messrs. Woodger and Broad were selected to represent the Society at the preliminary meetings for the formation of the National Association.

Mr. FLEMING exhibited a fractured navicular bone, the history of which he had related to the Society at a former meeting.

Rabies.

The subject for the evening's discussion, Rabies, was then introduced by Mr. FLEMING. In the course of his remarks he said it was evident that the disease was now very prevalent amongst our dogs, and that its wide extension was due to want of efficient sanitary measures.

The chief centre of morbid changes was to be found, he said, at the base of the brain, in the region of the medulla oblongata. All the fluids of the body are virulent, but especially so are the saliva and brain fluids, as has been recently demonstrated. It is, he remarked, largely to the public recognition of the initial symptoms of the malady, that we must look as a means of extinguishing it. The importance of this point should be recognised by Government.

Mr. Fleming said he had recently inclined to the doctrine that these virulent maladies, which owe their existence to germs, cannot be self-generated. Many facts in the history of Rabies and its geographical extension, are worthy of note. The disease has been known in Europe for a very long period, whereas in certain parts of the world it has never appeared. In the island of Mauritius, Rabies has prevailed since 1812; but in the adjacent island of Reunion, where severe restrictions are imposed upon the admission of dogs, the disease has never been seen; the same immunity has been enjoyed in Australia and New Zealand. The last-named countries have been populated by dogs from England, but evidently free from contagion when imported. In the Isle of Mauritius no precautions are taken with regard to the admission of dogs. In the knowledge of these facts we

have a powerful incentive to resort to extreme measures for the utter extinction of the malady. One step to this end, which has always been very successful on the continent, is a reduction in the number of dogs; therefore, the tax should be raised. Every dog should wear a collar with a registered number upon it; the owner of each dog would thus be known, and responsible for damage done. Then, again, the public should be informed as to the initial symptoms of the disease.

Mr. Fleming referred to the suggestion, made by him some years ago, that a description of these symptoms should be printed on the license paper; then, as soon as any suspicious symptoms appear, the animal should be subjected to the examination of a veterinary surgeon. All animals bitten by a rabid dog should be destroyed. In conclusion, Mr. Fleming said he was of opinion that, until it was recognised by Government that this was a disease which could be stamped out, we would continue to suffer from its visitations. The number of useless dogs was a source of danger to the community, and it behoved the members of the veterinary profession to show, in every possible way, the danger incurred by the public in allowing Rabies to exist in their midst.

Mr. BROAD expressed the indebtedness of the society to Mr. Fleming for so ably introducing the topic of discussion. The study of Rabies was, he said, important; at any time the disease might become so prevalent as to force itself upon the notice of Government, when we should be expected to be well to the fore with a true knowledge of it, and efficient measures for its prevention. Recent researches had thrown light upon the malady, especially the experiments of M. Galtier. From many points the subject was worthy of discussion; the varying way in which the symptoms are sometimes manifested; the situation of the virus during incubation, some had held that it remained in or near the bitten part, but from this opinion he differed. The *post-mortem* appearances also were deserving of consideration; he had recently had a marked illustration of the gorged spleen, said to be characteristic of Rabies.

Mr. WARD concurred with Mr. Fleming's suggestion that an outline of the primary symptoms should be given to the public, and related an instance of an owner of a dog obstinately refusing to believe Rabies was present because the animal showed no aversion to water, and was able to drink; the dog was undoubtedly rabid, and had bitten several people. He said that the term Hydrophobia was answerable for much of the misconception existing with regard to the symptoms to be expected from a mad dog, many persons, knowing the meaning of the name, expect to find the dread of water. Then, with regard to another mistake, running of saliva, or foaming at the mouth, is by no means constant.

Mr. SHEATHER said he had reason to believe that Rabies was now widely prevalent in the metropolis; he had had two cases under his notice within the last eight days; one case he related to show that not only have we to enlighten owners of dogs as to the symptoms of danger, but to be prepared for wilful perversion of facts concerning the symptoms and history of the outbreak.

Mr. DANIEL considered sufficient facts had been brought forward at the meeting to induce us to urge the inclusion of this disease among those named by the Contagious Diseases (Animals) Act. He was glad to hear that Mr. Fleming now considered that Rabies spread by contagion only, thus agreeing with the earlier writers. He also had found lesions in the brain in the situation named by Mr. Fleming. A question occurring to him was, could the bite of an animal incubating Rabies result in danger? He also asked for the opinion of the meeting as to the number of days an animal will live after showing rabid symptoms?

Mr. ATKINSON said he had seen a large number of mad dogs during the last two months. He considered it would be most difficult to lay down instructions by which an ordinary individual could recognise the disease ; it was not always easy, and he believed that some veterinary surgeons fail in diagnosing it. Many fits simulate Rabies in symptoms to a certain extent. On the other hand, rabid dogs are sometimes thought to be in a fit ; in the case of one dog thus brought under his notice, he diagnosed Rabies from the appearance of the eyes. In another instance, the only symptoms were peculiar dullness and nervous excitement.

Mr. T. MOORE thought the preventive measures suggested by Mr. Fleming were rather drastic, and that the diversity of the symptoms would be an obstacle to its early recognition by the public. A theory put forth by Mr. Moore, Sen., he considered feasible : it was to the effect that dogs may have a mild attack of Rabies and recover, but yet spread the disease during the time the slight symptoms are manifested. There are many cases in which madness follows the bite of dogs which, to all appearance, were not rabid at the time of the infliction of the wound. He would also ask, Could a dog with Rabies in incubation transmit it by a bite? if so, it would be difficult to deal with.

Mr. SAMSON was of opinion that fits should not be mistaken for Rabies rabid dogs do not run about in the violent manner of a dog in a fit, nor are they similarly convulsed. He agreed with the proposal to enlighten the public as to some of the most notable symptoms, by printing symptoms on the licence, with instruction as to the advisability of quickly seeking medical advice in cases of doubt.

Mr. GRAY said that what experience he had had of Rabies led him to suggest care in condemning dogs brought for examination while in a state of excitement. He remembered once securing a dog thus brought to him, supposed to be rabid ; by the next morning he saw that the attack was Epileptic, though so serious that he destroyed the animal. The only morbid appearances were congestion of the brain and much effusion at its base.

Mr. BROAD was of opinion that a little instruction on the licence papers would be of great benefit. There were cases of uncertainty and doubt, but as a rule rabid dogs had such a characteristic appearance and manner, from the earliest onset, that to any one with a fair amount of experience there should not be difficulty in selecting the right cases for suspicion, if they are not advanced enough for a positive diagnosis. He also had found that rabid dogs have sometimes unimpaired power of swallowing both solids and fluids. The duration of attack he had not found to exceed six days.

Mr. K. SHAW said he had not heard any one draw attention to the peculiar howl of a mad dog as a diagnostic symptom, and related cases in which it had been a marked feature. He thought it important to obtain all the information possible as to the history of the dog, and the circumstances attending the attack, as the diagnosis of Rabies was sometimes difficult.

Mr. BANHAM said that if, by printing on the licences the early symptoms of Rabies, we merely put the owners of dogs on their guard, and cause them to seek advice, we would do good. One notable symptom was, he thought, the protrusion of the membrana nictitans. He expressed a hope that Mr. Atkinson had taken advantage of his recent opportunity of making numerous autopsies. He considered that the most diagnostic sign was the presence of foreign bodies in the stomach.

Mr. WOODGER said he entirely agreed with the proposition of Mr. Fleming with regard to the licence papers; the notice of symptoms might not enable the dog owner to distinguish the disease, but would cause him to consult some one who was better informed. He did not think Rabies was ever of spontaneous origin, and said that in nineteen cases out of twenty it could be

traced to the bite of a rabid dog. The measures for stamping out the malady might be applied in a district during its prevalence, and suspended at other times. In one year a great number of dogs were brought to him suspected of being mad ; sometimes the cause of derangement was Epilepsy ; in some cases the owners thought a bone or hair was in the dog's throat. In some instances he had found the singular howl sufficient to prove the nature of the disease, even before it was suspected by the owner that anything serious was the matter. He had found a great diversity in the symptoms : some dogs will not bite, others do not bark or howl, and some need careful watching before sufficient evidence of their condition can be obtained. The word Hydrophobia is misleading. He had occasion to write to a local paper correcting some glaring errors which had been published in one of its articles; the editor in reply said that possibly Mr. Woodger was right as regards Rabies, but that after all that was only a mild form of Hydrophobia. The duration of attack he had found did not exceed a week. He mentioned two instances of suspicious symptoms and unusual aggressiveness being shown by dogs, but due entirely to a temporary condition of ill-humour and irritability.

Mr. FLEMING said the discussion had afforded him both pleasure and information. He expressed regret that medical men were so ill acquainted with the subjects of our studies ; the *desideratum* was the delivery of addresses on animal pathology in our universities. He had not alluded to the symptoms, taking it for granted that all were well acquainted with them. A general symptom was undoubtedly a change in the habit of the dog ; then a change in its temper. Especially is it aggressive to its own species and to strangers ; then there is a depraved appetite, and a tendency to wander. Efforts at swallowing, in the dog, do not cause that spasm of the glottis or respiratory muscles which in the hydrophobic patient so often threatens asphyxia. He did not think there was alteration of the fluids of the body till the early symptoms were developed, consequently during the latent stage the bite of the animal would be harmless. He considered that the maximum duration of life after the first symptoms appeared might be set down as ten days, the average period being five or six days. The muscles of the lower jaw are actually paralysed in many instances, yet great risk would be incurred by inserting the finger in the mouth, as reflex action would cause closure of the jaws. Several veterinary surgeons had lost their lives through thus attempting to explore the fauces. Inoculation of a rabbit might be resorted to as a test in a doubtful case. The long period of latency is difficult to be accounted for ; probably the germs are localised in some part of the system, and required only a certain stimulus to rouse them into activity ; it was curious to observe that lengthened latency was so rarely seen in experimental inoculation. Enlargement of the spleen and dark colour of the blood are noteworthy features of this disease. When applied to for recommendations, with the view of excluding Rabies from Australia, Mr. Fleming advised that dogs from other countries should be absolutely refused admission, or should be put under quarantine for a long period—for six, or even twelve months. In the island of Reunion, the authorities, knowing the extremely long latency of the malady, have entirely prohibited dogs from landing.

The thanks of the meeting were cordially tendered to Mr. Fleming for his address.

ALFRED BROAD, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

AT the meeting of this Society, held on July 12th, the Hon. W. Egerton (Chairman) reported that the under-mentioned veterinary surgeons, nominated the previous month, have accepted office :—Mr. C. Stephenson,

Newcastle; Mr. J. S. Carter, Bradford; Mr. W. Lewis, Crewe; Mr. D. Gresswell, Louth; Mr. W. F. Garside, Royal Agricultural College, Cirencester; Mr. T. J. Merrick, Northampton; Mr. G. A. Banham, Cambridge; Mr. Wm. Moir, Cardiff; Mr. W. Penhale, Barnstaple; Mr. T. D. Broad, Bath; Mr. Wm. Bromley, Lancaster; and Mr. Osborn Hills, Leamington. The following are the terms and conditions of the appointments:—

Members may obtain the attendance of the veterinary surgeon in any case of disease by paying his travelling expenses (which include railway fares, and 1s. per mile if by road, including the return journey), and the cost of his visit, which will be at the following rate, viz.:—

	£	s.	d.
When the whole day is occupied	1	10	0
When half a day or less is occupied	0	15	0
Personal consultation with veterinary surgeon ...	0	10	0
Consultation by letter	0	5	0
Post-mortem examination and report thereon ...	1	0	0

A return of the number of applications from members of the Society during each half year is required from each veterinary surgeon.

This report was adopted.

NEW MEMBERS OF THE PROFESSION.

AT the several meetings of the Scottish Section of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Edinburgh and Glasgow on the 13th, 14th, and 15th of July, 1882, the following students passed their "Final" Examination and received their diploma:—

Edinburgh Old College.

Mr. *J. F. Coleman	Sutton, Surrey.
„ W. C. Crondace	Haltwhistle.
„ *B. D. Pierce	Mass., U.S.A.
„ James Pow	Hawick.
„ *W. J. Welsby	West Derby, Liverpool.
„ M. P. Walsh	Sligo, Ireland.
„ G. W. Tennant	Carlow, Ireland.

Edinburgh New College.

Mr. C. T. Barnes	Uttoxeter.
„ J. N. Barber	Poynton, Stockport.
„ J. H. Carter	Bradford.
„ T. C. Bradshaw	Port Louis, Mauritius.
„ *H. H. Harrison	Chatsworth.
„ J. R. Jones	Llanrwst, Denbighshire.
„ G. C. O. Fowler	Greenock.
„ J. McLaren	Edinburgh.
„ G. Hutchinson	Great Eccleston.
„ R. M. Sunderland	Hetherton, Halifax.

Glasgow College.

Mr. J. M. Magill	Hilltown, Co. Down.
„ William Wright	South Sanquhar.
„ R. J. Maguire...	Pollokshields.

* Marked thus passed with "Great Credit."

The following students passed their "Second" Examination at the meetings of the Scottish Section of the Court of Examiners, held in Edinburgh and Glasgow on the 11th and 12th July, 1882 :—

Edinburgh Old College.

Mr. W. Anderson.
„ C. T. Lang.
Mr. *W. J. Marsden.
„ *J. F. Mahoney.

Edinburgh New College.

Mr. J. Ashton.
„ J. W. Bennett.
„ A. Hanson.
„ T. Bell
„ W. Kidd
„ *A. W. Lawson
„ J. McCauley.
Mr. *W. H. King.
„ Th. O'Malley.
„ *Th. Platts.
„ C. T. Richardson.
„ William Scott.
„ *Robert White.
„ *James Young.

Glasgow College.

Mr. Joseph Larkin
„ *Robert McNair
„ *J. J. Ross
„ *Robert E. Weir.
Mr. M. B. Scouler.
„ G. Frew.
„ G. McGregor.

* Marked thus passed with "Great Credit."

The following passed their "First" Examination at the meetings of the Court of Examiners, held in Edinburgh and Glasgow on the 8th, 10th, 17th, and 18th July, 1882 :—

Edinburgh Old College.

Mr. *F. Ashley.
„ Joseph Barclay.
„ *H. Barrett.
„ A. W. Barnes.
„ *C. Cowie.
„ *W. R. Davison.
„ R. C. Irving.
„ William Kent.
„ *Alfred Kershaw.
„ Charles Ladds.
„ P. Duffy.
Mr. *Charles McEachran.
„ B. O. Meek.
„ Alexander Robertson.
„ George Robertson.
„ Alexander Wood.
„ Charles Tait.
„ T. J. Walsh.
„ Henry Wilkinson.
„ Richard Quinn.
„ James Graham.

Edinburgh New College.

Mr. William Berry.
„ James Borthwick.
„ Robert Brizell.
„ M. Carroll.
„ G. Hulme.
„ S. Jackson.
„ Alexander Lennox.
„ *W. Lothian.
„ D. Lyons.
„ J. Malone.
„ S. W. Martin.
„ C. Dyson.
Mr. J. Forgham.
„ A. Isledhill.
„ *A. J. Haslam.
„ J. Nadal.
„ James Purdy.
„ Joseph Purdy.
„ J. J. Ridley.
„ James Richardson.
„ *T. A. Rudkin.
„ George Wilks.
„ D. Charnock.
„ R. Hollands.

Glasgow College.

Mr. S. M. McConechy.
„ *A. L. McMillan.
„ *A. Stewart.
„ A. C. Forbes.
„ *R. H. Gilmore.
„ *A. Edgar.
„ *F. P. Bennett.
„ J. K. Calderwood.
„ A. W. Mackeand.
„ A. Murdoch.
„ R. Baird.
„ *R. D. Dove.

Mr. N. B. Green.
„ *R. Malloch.
„ C. M. Smith.
„ W. Macdonald.
„ A. A. Leekie.
„ *T. Butcher.
„ J. Hart.
„ J. Jolly.
„ F. Kerr.
„ *R. T. Huston.
„ J. Beevor.

* Marked thus passed with "Great Credit."

THE NEW VETERINARY COLLEGE, EDINBURGH.

AT the termination of the summer session of this Institution, sixty-four students presented themselves for examination before the Board of Examiners of the R.C.V.S., at the Freemasons' Hall, Edinburgh. Forty-eight of these succeeded in passing their examination, ten doing so with great credit.

At the pass examination, the following gentlemen received their diploma, and were admitted members of the R.C.V.S. :—Messrs. H. H. Harrison,* Edinsor, Derbyshire ; J. N. Barber, Stockport ; C. T. Barnes, Uttoxeter ; Jas. McLaren, Edinburgh ; G. C. O. Fowler, Greenwich ; J. R. Jones, Llanrwst ; T. C. Bradshaw, Mauritius ; G. Hutchinson, Leyland ; R. M. Sunderland, Halifax ; J. H. Carter, Bradford.

The following gentlemen were successful in passing the second examination :—Messrs. J. Young,* Cockermouth ; A. W. Lawson,* Denning ; T. Platts,* St. Helens ; R. E. White,* Tadcaster ; W. King,* Coventry ; A. E. Hanson, Halifax ; J. W. Bennett, Leigh ; E. T. Richardson, Alford ; Jas. Ashton, Bolton ; T. Bell, Arbroath ; W. Scott, Clonmel ; W. Kidd, Alexandria ; Jos. McCauley, Carlisle ; O'Mally, Ennis.

The following gentlemen passed the first examination :—Messrs. A. J. Haslam,* A. Lennox,* T. A. Rudkin,* W. Lothian,* Jas. Malone, W. Berry, Jas. Richardson, Jas. Borthwick, R. G. Brizell ; D. Charnock, G. Hulme, M. Carroll, J. Ridley, S. W. Martin, C. Dyson, S. Jackson, T. Nadal, Jas. Purdy, Jos. Purdy, D. F. Lyons, A. Gledhill, G. Wilks, Jos. Forgham, and R. Hollings.

On Tuesday, July 18th, a meeting was held in the theatre of the College for the purpose of distributing the prizes to the students who had been successful in their competitive class-examination. Professor Williams occupied the chair, and distributed the prizes as following :—

Chemistry.—Silver Medal, presented by Prof. Wallace, Cirencester, gained by Mr. W. Lothian, Dunse.

Practical Chemistry.—Silver Medal, presented by Mr. F. King, City Analyst : Mr. Jas. Borthwick, Kirkleston. Bronze Medals, presented by Dr. S. Macadam : Messrs. A. J. Haslam, Manchester ; T. A. Rudkin, Willoughby ; Jos. Forgham, Holmes Chapel ; and S. W. Martin, Chesterfield. Certificates of Merit were gained by Messrs. W. Allan, W. Berry, A. Lennox, R. G.

* Those with the * passed with great credit.

Brizell, A. W. Middlehurst, R. Rimmer, T. Watson, D. Charnock, Jos. Purdy, and A. Watson.

Materia Medica.—Silver Medal (Highland and Agricultural Society of Scotland), Mr. A. J. Haslam, Manchester. Certificates of Merit: Messrs. Lothian and Rudkin.

Botany.—Silver Medal (H. and A. S.), Mr. Lothian, Dunse. Certificates of Merit: Messrs. Haslam, Forgham.

Parliamentary Intelligence.

House of Commons, August 15th.

RUSSIAN CATTLE IN CYPRUS.

Sir W. Barttelot asked the Secretary of State for War whether the statement in a letter in *The Times** of August 14, and written by Mr. George Fleming, F.R.C.V.S., was correct, that 300 head of Russian cattle had been sent from Odessa to Limasol for the use of the troops in Cyprus and in Egypt; and, considering the terrible character of the Rinderpest, and that it usually, if not invariably, followed the free import of Russian cattle, steps were being taken, or would be taken, to prevent so great a calamity to Cyprus and to Egypt as the introduction of that fatal disease?

Mr. Childers.—In reply to my hon. and gallant friend, I have to say that since 1878 all supplies of beef for the troops in Cyprus have come from Odessa. The arrangements for this purpose were made in the time of the late Government, and great care has been taken to prevent any ill results, such as the introduction of Rinderpest. The measures adopted for this purpose have been completely successful, and I have no doubt will continue to be so.†

* The following is the letter referred to:—

RUSSIAN CATTLE FOR EGYPT.

To the Editor of "The Times."

Sir,—It is announced in this morning's papers that a ship had arrived at Limasol, from Odessa, with a cargo of 300 bullocks for the English Government. These animals are, I presume, for the use of the troops in Egypt, and if such be the fact, I would beg of you to allow me to point out the great danger incurred in importing Russian cattle into that country. Russia, as is only too well known, and particularly Southern Russia, is the home of the Cattle Plague, and for centuries the events of war have carried that terrible scourge far beyond her frontiers into other countries. If Russian cattle find their way into Egypt, it is almost certain (if history is to be relied upon) that the disease will accompany them; and in addition to the other horrors of war, we shall have the desolation wrought by Rinderpest. I may point out that on several occasions Egypt has been most seriously visited by the disease, not only the oxen and buffaloes perishing in multitudes, but also camels, goats, and sheep. One of these visitations is frequently and pathetically alluded to in the late Lady Duff Gordon's book on Egypt.—Yours obediently, George Fleming, F.R.C.V.S., Army Veterinary Inspector.

† This statement is not correct. Cyprus was invaded by the Cattle Plague so recently as two years ago; and in May, 1880, of 1,540 cattle attacked, 1,447 had perished. *See* Veterinary Journal for October, 1880, p. 290.

Army Veterinary Department.

Gazette, August 8th.

Veterinary Surgeon Stuart Murray Wilson, to be Veterinary Surgeon, First Class.

The state of affairs in Egypt has necessitated the despatch of an Army Corps from England and another from India. For the service of that from England, the following officers of the Army Veterinary Department have been detailed :—Inspecting Veterinary Surgeon Meyrick (who will assume the duties and have the local rank of Principal Veterinary Surgeon), and Veterinary Surgeons Burt, Walker, Rostron, Boulter, Sartin, Hagger, Thomson, Pallin, Rayment, Matthews, Griffiths, Bennett, Smith, Case, Spooner, Burke, Mitchell, Beech, and Whitfield, with M. Anderson, Pringle, Savage, Mann, and Crowe, from India.

Veterinary Surgeons Percivall and Clayton have been sent to Italy, Ewing to Valencia, and Cox to the United States, to inspect and purchase mules.

Obituary.

THE death is reported of L. BYRNE, M.R.C.V.S., half-pay, *late* 1st Dragoon Guards, who graduated in 1842 ; also, ALEXANDER HORNE, M.R.C.V.S., August 18th, at John's Bridge, Kilkenny.

We have also received notice of the demise, at Berlin, on the evening of August 13th, of Dr. Ernst Friederich GURLT, in the 88th year of his age. Gurlt was for many years a teacher at the Berlin Veterinary School, which he joined in 1825, after obtaining his medical degree at Breslau, where he was anatomical prosector under the celebrated Otto, his dissertation for the degree being "De Venarum deformitatibus." During his long professional career, he laboured earnestly in promoting medical and veterinary science, and his efforts have been crowned with success, their value being recognised not only in Germany but in other countries. His writings are numerous, but perhaps the most important among them is the "Handbuch der Vergleichenden Anatomie der Haus-Säugethiere," the fine "Hand-Atlas der Anatomie des Pferdes" in folio, the "Lehrbuch der Vergleichenden Physiologie der Haussäugethiere," the "Anatomie der Hausvögel," the "Lehrbuch der Pathologische Anatomie," and "Ueber Thierische Missgeburten," the last part of which appeared so late as 1877. In conjunction with Hertwig, he edited the *Magazin für Thierheilkunde*, the leading professional journal in Germany, from its commencement, and to it he contributed many papers of the highest interest and importance. Gurlt's name will ever be honourably associated with the development of veterinary science in Europe, while it will enhance the reputation of a school which has been prolific in training the greatest masters of this science. Our deceased and deeply-regretted colleague was an Honorary Associate of the Royal College of Veterinary Surgeons.

Jurisprudence.

ALLEGED BREACH OF WARRANTY OF A HORSE.

In the Sheffield County Court, recently, before the judge (Mr. T. Ellison) and a jury, an action was heard, the plaintiff in which was Mr. Charles Wardlow, steel manufacturer, of Charlotte Street, and he sought to recover £50 from Mr. Richard Pears, horse dealer, of the Clough Mews, St. Mary's Road, for loss and damages alleged to have been sustained by the re-sale of an unsound horse. Mr. A. Muir Wilson appeared for the plaintiff, and Mr. J. E. Barker (instructed by Messrs. Clegg and Sons) was for the defendant. The case was tried before his Honour and a jury on the 31st of May, but the jury were unable to agree upon a verdict, and they were discharged.

Mr. Wilson, in opening his case, said it had unfortunately already occupied the attention of the Court, and therefore he wished to draw the attention of the jury particularly to the facts—facts which he believed he should be able to prove in the most indisputable manner. In the early part of January, the plaintiff being in want of a horse, went with his groom to the defendant's mews, and three were shown to him. The plaintiff was pleased with one of them, and it was ultimately agreed that he should have it for £83. Mr. Wardlow had known Mr. Pears for many years, and in the conversations which took place between them the defendant several times assured him that "the horse was perfectly sound." A veterinary surgeon's examination was offered, but the plaintiff declined it, remarking that he would take the defendant's word as to the soundness of the horse. The animal was sent to Charlotte Street, and the plaintiff after trying him a short time found that he was diseased and altogether unfit for his work. He informed the defendant, who at first seemed disposed to come to terms with him about it, but nothing came of the negotiations. Further professional advice was taken, and the plaintiff then sent the horse for sale by auction, and it realised the sum of £33 10s. Since the last hearing he (Mr. Wilson) had seen Mr. Cartledge, the leading veterinary surgeon in the town, and had ascertained that at the request of Mr. Pears he saw the horse, and he told the defendant that it was unsound. The defendant's solicitor saw Mr. Cartledge, and asked him to give evidence in support of the defendant's case, and he replied that he could not, as the horse was unsound. Mr. Pears, however, swore that he did not know the horse was unsound, whereas Mr. Cartledge, who had been subpœned to attend, would prove that he told him it was unsound when he examined it. He regarded that as a suppression of the truth on the part of the defendant. Mr. Cartledge had told him of the state of the horse, and as an honest man he ought to have brought that gentleman into court to assist in an honest settlement of the dispute. It was not a question of "snapping a verdict," but of getting at the truth. Mr. Wardlow and his groom would swear that a distinct verbal warranty was given with the horse. Mr. Pears would swear there was not; and it would be for the jury to say which they believed. With respect to the condition of the horse, he should call Mr. Cartledge and other professional witnesses, who would swear that the horse was spavined and ringboned; and against them would be called Mr. Jackson and other witnesses.

One of the jurymen at this point rose, and said, I think a great deal of this conversation might be stopped.

The Judge: Mr. Wilson is perfectly right.

The juryman: It is taking up time; that is what I thought.

The Judge: You must take up time in opening a case properly.

Mr. Wilson remarked that he did not wish to be tedious, and he concluded

by reminding the jury that it was for them to say upon the evidence whether a warranty was given with the horse, and, if so, whether there had been a breach of it.

The plaintiff and his groom, George W. Morris, were called, and gave evidence as to the purchase of the horse, the verbal warranty that was given with it, and to the subsequent discovery that it was unsound.

Mr. Thomas Fletcher, veterinary surgeon, proved that the first time he saw the horse it was suffering from Spavin and Ringbone of long standing. In fact, it had not a sound leg to stand on.

Mr. J. T. Thompson, veterinary surgeon, said the horse had Spavin on two legs, Ringbones on three legs, a Sidebone, and a bony enlargement. It must have been so diseased when the plaintiff bought it.—By Mr. Barker: It was quite possible for a horse with these ailments to go all right for a time, but it would eventually fall lame.

Mr. B. Cartledge, ex-president of the Royal College of Veterinary Surgeons, was called, and said he examined the horse at the defendant's mews on the 17th and the 29th of April. It was unsound in both hocks, there being Bone Spavin in the near hock. It had existed three or four months, and it might have been longer.—By Mr. Barker: There was Bone Spavin on the near hock, and there was pre-disposition to it on the other hock. If the one hock had been as good as the other he should not have rejected the horse, but should have passed it with a proviso. He saw no Ringbones.—The Judge: Did you examine the horse for Ringbones?—Mr. Cartledge: Yes, generally.—Mr. Barker: Did you see any Ringbones?—Mr. Cartledge: No.—Or enlarged knee?—No, nothing to attract my attention. The horse might be a very useful one if it remained free from lameness.

Mr. T. C. Fletcher, veterinary surgeon, was also called, and he expressed the confident opinion that the horse had all the ailments described by Mr. Thompson.

This concluded the case for the plaintiff.

Mr. Barker, in defence, said there was a dispute between Mr. Wardlow and Mr. Pears, and he should be very sorry if the jury had to discuss the invidious task of saying which of them was speaking the truth. It was quite possible that Mr. Wardlow might have thought that a warranty was given with the horse when Mr. Pears intended nothing of the sort. If the horse was such as the witnesses had described, there was enough evidence to justify the jury in giving a verdict for the plaintiff, not on the ground of breach of warranty, but on the ground of misrepresentation. Assuming the horse to have been sold with a warranty, the jury had to decide whether or not it was lame on the day it was sold. It did not matter if it became lame afterwards; with that they had nothing to do. Proceeding to analyse the evidence, the learned counsel reminded the jury that three of the professional witnesses who had been called swore that the horse was suffering from Spavin, Ringbones, Sidebones, and enlargement. Mr. Cartledge had been called, and he had directly contradicted the evidence of the other three. He should call three witnesses, who would prove that Mr. Cartledge was wrong, and that the horse was perfectly sound. His case was that the horse was sound when sold, but that in consequence of the inflammatory action subsequently set up, lameness supervened.

The plaintiff and several other witnesses were called in support of the defendant's case, and from their evidence the horse seemed to have had at least several owners. Mr. Marshall, of Leeds, bought it in December, and he sold it to Mr. Pears for £62. He sold it to Mr. Wardlow for £83, and when put up by auction it realised £33 10s. Mr. Pears took it to Northallerton, and sold it to Mr. Goddard, of London, for £60. Mr. Goddard has since disposed of it to Mr. A. Stainton, veterinary surgeon, of Holloway, for

£50; and he has sold it to a medical gentleman, who is now using the horse. These witnesses, as well as Mr. W. Jackson, veterinary surgeon, and Mr. Joseph Axe, veterinary surgeon, Doncaster, all asserted that the horse was sound, and free from Spavin. It had strong, rough hocks, and the roughness might have been mistaken for Spavin.

Mr. Wilson, in summing up his case to the jury, commented upon the fact that the defendant had abandoned his assertion that there was no warranty, and said he evidently felt that the case was so conclusively proved against him on that point that it would be no longer safe to deny it.

His Honour told the jury that the sole question they had to decide was, whether or not the horse was unsound on the 6th January, when it was sold to the plaintiff; or was he subject to any infirmity—Spavin or otherwise—that made him lame shortly afterwards.

The jury returned a verdict for the plaintiff for the amount claimed, with costs.

Notes and News.

A Foal Giving Milk.—In June last (says the *Carlisle Patriot*), a mare belonging to Mr. Ellwood, of Kingmoor, dropped a filly foal, which, it was immediately noticed, had enlarged milk glands; after careful examination, milk was drawn from the udders—no less than three pints that day. About a pint was taken from the foal daily up to Saturday last, when there was a considerable falling off. The cause of this lacteal secretion was due to the abnormal condition of the umbilical cord, which was open after birth, and the foal having undergone an operation the other day on this account, the secretion has been discontinued. Neither Mr. Carlisle nor Mr. Bell, who attended the foal, have met with a similar freak of nature before.—In the *London Medical Record* for June, Dr. V. Idelson contributes a notice of milk being secreted in a boy of ten months. He says: "Dr. Lesenevich (*Vracheb Vedom.*, No. 10, 1882) has under his observation a boy of ten months old, whose both mammary glands secrete a milky fluid, and have done so since the child's birth, the glands have the shape of roundish soft tumors, of the size of a large nut. On moderate pressure a few drops of milk ooze out; on rather strong compression of the gland, the milk is ejected in the form of a thin jet, reaching the height of about three feet. When the glands are left untouched during two or three hours, the secretion oozes by itself, leaving grey spots on the linen. The fluid gathered in a wine-glass did not differ in any way from a woman's milk."

A Blood Diet for the Herbivora.—The fact that all animals, even the herbivora, are at first nourished on a diet of milk, which must be considered as purely animal, led M. Regnard to suggest that an animal diet might be employed with advantage at a subsequent epoch in their history. The idea is not new, but attempts to verify it by, for instance, feeding horses on meat, raw or cooked, invariably failed in consequence of the disgust which this diet occasioned. It occurred, however, to M. Regnard that an animal substance might be utilised—certainly highly nutritious, of which tons are wasted weekly—viz., blood. The problem was how to present it to the animal in such a form as not to occasion disgust. The blood was heated to 100 C, and the coagulum thus obtained was pressed and rapidly dried in a stove, and then powdered in a coffee-mill. It was found to keep well, and to be destitute of odour and of taste, and was given, mixed with other food, in doses varying from ten to eighty grammes daily. The experiments were made on lambs which had been abandoned by their mothers. Three lambs were kept on

the ordinary diet of beetroot, hay, etc., and to three others the powdered blood was given. The first steadily lost flesh, while the latter increased to three times the original weight, and connoisseurs declared that they had never seen such fine lambs of the same age. The animals surpassed their fellows which had been suckled by their dams both in weight and size, and their coat of wool became doubled in thickness. Experiments of the same kind are now in progress with calves, and promise to be as successful as the others. It will certainly be a matter of high importance if the vast amount of nutriment now almost entirely wasted can be thus utilised. The saving of milk in rearing calves, for instance, would alone be a most valuable item. It appears that this system of alimentation is applicable also to man. In the case of a rickety child of eighteen months the results are said to have been most encouraging.—*The Lancet.*

TUBERCULOSIS.—The city physician of Vienna, Dr. Kammerer, has addressed a report to the magistrates of that city on the dangers which threaten the health and life of the population, through animals affected with Tuberculosis. The victims are insidiously struck down, says Dr. Kammerer, through two of the most important articles of daily diet—milk and meat. The milk of cows with Tuberculosis acts as an unconscious vaccination upon adults and children who partake of it, and in the case of the latter the seed of Tuberculosis is being imperceptibly sown amongst thousands in the great towns. Dr. Kammerer regards infection by this channel as being quite as fruitful a source of the disease amongst the young as hereditary, to which it is usually traced. He regards it as exceedingly doubtful whether boiling, or roasting ever so thoroughly, can effectually eradicate the germs of infection in the flesh of tuberculous animals.

TRICHINOSIS.—This parasitic disease has recently attacked eighty soldiers and a number of civilians in the town of Cöln, Germany. The majority of the cases appear to have been due to eating uncooked sausages, the manufacturer himself suffering from the malady. No deaths had been reported.

VETERINARY HONOURS.—It gives us much pleasure to learn that our distinguished colleague, M. Zundel, of Strasbourg, was in June last elected a corresponding member of the Belgian Academy of Medicine. Professor Bouley, Inspector of the French Veterinary Schools, has been elected President of the Acclimatisation Society of France. The Paris Academy of Medicine has awarded the Barbier Prize of 6,000 francs (£250) to Professor Toussaint, for his researches in Anthrax, Fowl Cholera, and experimental Acute Septicæmia. At the graduation ceremony of the Edinburgh University, held on August 1st, Mr. J. McFadyean, Professor of Anatomy in the Dick Veterinary College, received the degree of Bachelor of Medicine and Master in Surgery. At the distribution of prizes and conferring of degrees in the Toronto University on June 8th, in the Faculty of Medicine, the University silver medal was bestowed on J. T. Duncan, Professor in the Ontario Veterinary College.

Correspondence, etc.

THE FLEMING TESTIMONIAL.

DEAR SIR,—At the annual meeting of the Royal College of Veterinary Surgeons in May last, it was announced that a strong feeling existed throughout the profession that a testimonial should be presented to Mr. George

Fleming. This announcement was received with enthusiasm. It may be truly said that Mr. Fleming has consecrated his life to the profession, devoting all his energies and powers to raising its dignity and extending its usefulness. His writings, which are very numerous, are of the highest order, and reflect not only the greatest honour on him, but upon the profession at large. As evidence of the position he holds, it may be mentioned that he has been elected president, fellow, associate, or corresponding member of twenty-four learned and scientific societies in this country, on the Continent, and in America and Australia. And as a proof of the estimation in which he is held by the profession here, and the confidence placed in him, he has been elected President of the Royal College of Veterinary Surgeons for three years in succession.

To Mr. Fleming we are indebted for the "Veterinary Surgeons' Act," a measure which places the profession in its proper place as a scientific body, and which in time will be esteemed one of the greatest boons ever conferred upon it in this country, and indirectly, perhaps, in all English-speaking countries, while it will prove of immense importance to the public and to humanity. This he obtained at a great amount of labour and anxiety. He organized and headed the important deputation which recently waited upon the President of the Privy Council, to solicit Government assistance in the promotion of veterinary science.

These splendid services, we, the undersigned, think deserving something more than our warmest thanks, and we earnestly ask you to join us in recognising them, by presenting him with a testimonial in the form of a full-length portrait, to be hung in the Council Chamber of the Royal College of Veterinary Surgeons.

It has been decided that the amounts of subscription are to be unlimited.

Subscriptions are now received by, and are requested to be sent to, the Honorary Treasurer, Mr. H. J. Cartwright, F.R.C.V.S., Veterinary Surgeon, Wolverhampton.

The Executive Committee is composed as follows: President, Thomas Greaves, Manchester; Treasurer, Henry J. Cartwright, Wolverhampton; Hon. Secretary, John Bean Martin, Rochester; Professor William Robertson; Ex-Professor James Beart Simonds; Professor George Thomas Brown; Professor James McCall; Professor Thomas Walley; James Collins, Esq., Principal Veterinary Surgeon to the Army; Major-General Sir Frederick Fitzwygram, Bart.; E. C. Dray, Esq.; Wm. Whittle, Esq.; T. H. Santy, Esq.; J. D. Overed, Esq.; Peter Taylor, Esq.; M. J. Harpley, Esq.; H. L. Simpson, Esq.; F. W. Wragg, Esq.; T. H. Simcocks, Esq.; J. J. Sperring, Esq.; James Lambert, Esq.; T. D. Lambert, Esq.; J. W. Mulvey, Esq.; J. D. Barford, Esq.; G. Kidney, Esq.; Edward Stanley, Esq.; Wm. Broughton, Esq.; R. Rutherford, Esq.; John Hammond, Esq.; H. Olver, Esq.; J. H. Ferguson, Esq.; J. W. T. Moore, Esq.; Wm. Leather, Esq.; Capt. B. H. Russell; Alfred Broad, Esq.; Andrew Spreull, Esq.; James Freeman, Esq.; Jos. Freeman, Esq.; John Freeman, Esq.; John Ferris, Esq.; J. Woodger, Junr., Esq.; C. W. Elam.

The Veterinary Medical Associations throughout the land have taken up the subject most heartily. The President and Secretary of each Association are requested to kindly act as centres for their particular district, and forward all subscriptions to the Treasurer of the Fund.

Professor McCall says, "No man deserves better at the hands of his professional brethren than Mr. Fleming, and I hope the testimonial will be in keeping with his merits."

I am, yours faithfully,

J. B. MARTIN, M.R.C.V.S., *Hon. Sec.*

Rochester, *June* 10*th*, 1882.

NEW REMEDIES.

SIR,—I had no intention whatever of misquoting Mr. Maynard's statements to suit my own ends, nor do I see that the accusation put forward by him is warranted. I still say that, according to his statement, the animal was cured, and I think he must admit that a cow which has suffered from any acute disease (such as Pyæmia), when "found quite comfortable and chewing the cud," is to all intents and purposes convalescent, and, so far as the disease is concerned, *cured*.

I have never said the cases were fictitious; I did hint at a possible or probable error in diagnosis, and how far the insinuation is justifiable I leave for others to decide.

My quotation from Mackey and Co.'s label *was not a mis-statement*, as you, Mr. Editor, know. I gummed the clipping therefrom to my letter, and I may say that it was received direct from Messrs. Mackey and Co., after the publication of Mr. Maynard's reply to my first letter. Why some should be favoured with the formula, and others not, is best known to the firm; and how long the formula has been published will be known to those who have been in the habit of using the nostrum. Even with the published formula before the profession, it may be necessary for Mr. Maynard to give his "chapter and verse" description of the other cases, and probably many more, before his *dicta* can be accepted. I should be much surprised if "Pharmacon" is the only individual who is sceptical as to the virtues of the compound, as set forth by Mr. Maynard.

I note the statements regarding the superiority of quinquinine over quinine, but I fail to see any proof thereof.

In my opinion, Mr. Maynard might with advantage consult some good medical dictionary (as Dunglison's) on the correct method of spelling my *nom de plume* and a host of pharmaceutical terms derived from the same source.

Mr. Maynard's "suspicions" are unfounded and erroneous, as I claim no pretension whatever to rank among the *literati*, and I am inclined to think his would-be sarcastic remarks are much more applicable at home.

Whether Mr. Maynard or I have been the more "egotistical," "unjust," "untruthful," "wilfully false," "possessed of no small self-importance," "and more than a *trace* of vanity," etc., I am quite willing to leave to the opinion of those who have read the correspondence.

Yours, etc.,

PHARMACON.

[As no interest or benefit can now be afforded our readers by the correspondence on this subject, we think it should cease.]

OUR VETERINARY DEPARTMENT.

SIR,—Under the above heading, in a weekly paper published in Dublin, appears the following, which shows the undignified position a veterinary surgeon sometimes accepts, from pecuniary or other motives.

"We have just completed arrangements with Mr. John J. Sperring, V.S., F.R.C.V.S., to take charge of our veterinary department. This gentleman will each week answer all queries addressed to us on veterinary treatment, and afford other valuable information to the readers of this journal.

Letters should be addressed, 'Veterinary Department, *Sport* Office, 83, Middle Abbey Street, Dublin.'"

We do not find medical men prescribing for patients through the columns of a public newspaper, but unfortunately there are some veterinary surgeons who do not appear to know what is discreditable to themselves and injurious to their profession.

In the VETERINARY JOURNAL for February, 1878, you, Mr. Editor, rightly remark: "It is true that certain agricultural and sporting papers have a 'Veterinary' Editor, or as an American paper has it, a 'horse-doctor,' on their staff, who gives advice free, and prescribes for injuries, derangements, and maladies *which he has not seen*, and which may then be under the treatment of some qualified member of the veterinary profession, the owner being desirous of knowing from the learned editor whether such treatment is right. *We need scarcely say that we think it undignified and unworthy the position of veterinary surgeons to act in this manner.*"

Those members of the profession, and particularly Fellows of the Royal College of Veterinary Surgeons, who transgress professional ethics, deserve censure from their brethren; and these remarks are made in the hope that they may yet be made to mend their ways.

Dublin, *August* 2. Yours faithfully,

J. H. JONES, *Government Veterinary Inspector.*

Communications, Books, Journals, etc., Received.

Communications have been received from J. Ferris, A.V.D., Longford; J. H. Jones, Dublin; R. W. Burke, A.V.D., Limerick; B. Cartledge, Sheffield; W. Williams, Edinburgh; M. J. Treacy, Indianapolis, U.S.A.; G. A. J. Muir, Wexford; "Pharmacon"; W. Woods, Wigan; A. Broad, London; D. Dudgeon, Sunderland; A. W. Hill, London; E. Batt, London; A. Kershaw, Lincolnshire.

BOOKS AND PAMPHLETS: Versuche über die Wirkungsweise der Milzbrandimpfungen Nach dem Pasteur'schen Ferfahren; *M. E. Decroix*, Neuf Cas de Guerison de la Rage; *R. S. Reynolds*, An Essay on the Breeding and Management of Draught Horses; Transactions of the Epidemiological Society of London; *C. A. Gordon*, Remarks on Experimental Pharmacology; *J. D. B. Stillman*, The Horse in Motion; *G. S. Heatley*, The Horse-Owner's Safeguard; *L. Brusasco*, Carbonchio; *J. B. Martin*, The Breeding of Horses.

JOURNALS, ETC.: *Archives Vétérinaire; Wochenschrift für Thierheilkunde und Viehzucht; La Clinica Veterinaria; Squire; Recueil de Méd. Vétérinaire; Journal de Médecine Vétérinaire et de Zootechnie; Sanitarian; Repertorium der Thierheilkunde; Zeitschrift für Vergleichende Augenheilkunde; La Presse Vétérinaire; Live Stock Journal; Der Thierarzt; Proceedings of the Medical Society of Kings; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; American Veterinary Review; Echo Vétérinaire; Annales de Médecine Vétérinaire; Australasian Veterinary Journal; Chicago Live Stock Journal; Tidskrift för Veterinär-Medicin; Revue Vétérinaire; Field; Nature; Edinburgh Medical Journal; Medical Press and Circular.*

NEWSPAPERS: *Sport; Toronto Evening Globe; Nouvelliste de Seine-et-Marne; Sunderland Times; Sunderland Daily Echo; Leeds Mercury.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

OCTOBER, 1882.

INTERMITTENT FEVER IN THE HORSE.

BY A. G. ROLLS, M.R.C.V.S., ARUNDEL.

CASES of intermittent fever in the lower animals may be found scattered through European veterinary literature, though its existence has been denied by eminent authorities on animal diseases. Reference to the volumes of the *Veterinarian* will show that English periodical veterinary literature by no means abounds in examples.

The following case seems beyond dispute :—

On Saturday, April 1st, 1882, I was asked to visit a carriage horse belonging to a gentleman in the neighbourhood of Arundel. The stables are situated on the South Downs, and lie remarkably open and well ventilated; in fact, almost the last place one would select for the occurrence of malarial disease. The horse had some short time previously been for a fortnight at Bognor. The hay used had been grown on a hill farm, and those in charge were most positive that no hay from low-lying meadows had been used for months past.

The attendant reported that on this, as on the three previous days, the horse had been seized suddenly with violent shivering and blowing. On this day (Saturday) the attack had been more severe; he had sweated profusely, lain down, and even scraped a little with his fore feet. He had heard a sort of gurgling noise in the throat, after which the animal seemed much relieved.

I found the horse in a comfortable, roomy box, well clothed with double rugs and hood, feeling very warm; pulse 60, rather full and soft; nothing abnormal could be detected on auscultating the chest, and he was considered very much better.

The horse beginning to feed, I thought the attack probably due to gastric indigestion and tympanitis, the animal being a windsucker, and the groom positive there were palpable eructations, followed by relief. I ordered the horse to be well mashed, precautions taken against his wind-sucking, but gave no medicine.

Sunday, April 2nd.—The horse had another attack, for which he was given, to cut it short if possible, ℞ Tinct. Opii, ʒiss; Ether Rect. ʒj; Potass. Bromid, ʒj; Aqua, oj; Mix.

April 3rd, 10 o'clock a.m.—On examining the horse this morning, I found the pulse natural in number and character, but he seemed feverish, the skin feeling hotter than natural to the hand; the mouth was unpleasant, and the tongue furred; the fæces in small, hard, slimy balls.

To have the following fever mixture twice to-day:—℞ Tinct. Digitalis, ʒiv.; Antim. Potass. Tart. ʒj; Potass. Nitras, ʒij; Camphoræ, ʒj.

During the evening I was somewhat surprised by a message asking me to see the horse at once, as he had been again taken about ten minutes after receiving his evening draught—blowing and shaking, had got down, and was unable to rise. I at once rode over, and found the horse, in the opinion of the men, better. I inquired particulars of the attack, and was informed "that the horse had seemed very well all day, had fed well, and appeared doing satisfactorily, but just after receiving the second fever draught, he commenced shivering and blowing, perspired profusely, and finally went down, and would not attempt to rise; he even rolled over and pawed about." I found the horse up; there were distinct traces of sweat about him; his pulse was full, soft, and over 60 in number; visible mucous membranes injected. The animal seemed in rather an excitable nervous condition—held his head high up, and frequently threw it up and down; everted his upper lip, and unless held continually walked round the box. He would stand perfectly quiet if one of

the men pulled his ears or played with him, but when at liberty kept marching about in evident uneasiness. He frequently switched his tail up and down, placed himself in position to stale, which he did ; no retention of urine was noticed.

Gave draught No. 1. Examination after an hour's interval showed the horse to be better ; the uneasiness was much less. Before, the animal seemed unwilling to be left alone, pawing the door when the men left the box—a habit he was not guilty of when in health. Gave a second dose before leaving him, and left a man to watch him during the night.

Tuesday, April 4th.—Man reports that the horse seemed well during the remainder of the night ; pulse natural ; fæces hard, slimy, and tongue furred ; feeding well, and apparently nothing the matter. Decide to give him a mild aperient, *i.e.*, Physic ʒiv.

The ball acted the following day, and during the time the horse was under its influence no attack was noticed, but when set, on the 8th, he was seen to be again shivering and blowing.

9th.—He had a similar attack, attended with slight hæmorrhage from one nostril.

Monday, 10th.—My attention having been called to the fact of the horse having had attacks on the 8th and 9th, and having seen one attack commence, I had not the slightest doubt of its thoroughly intermittent febrile character, and I decided to place him at once on Quinæ Sulph. ʒss. twice a day. In the attack I witnessed, the horse had not long been fed, only some few minutes, and when left by the groom was to all appearance perfectly well. When I entered the box I found him shaking violently, but continuing to feed ; pulse small, rather hard, about 56, of a distinctly different character to the pulse I found when I had seen the animal just after the attacks had passed off ; it was then full, soft, and slow ; at other times the pulse was natural. The nasal mucous membrane was rather livid looking ; the mouth and skin seemed cold, and when held away from his corn, the shaking was sufficiently great to almost make his teeth chatter. There was slight nasal hæmorrhage, the blood apparently thin and dark-looking.

11th, 12th, 13th, and 14th.—Had very slight attacks, with hæmorrhage from both nostrils.

15th.—No attack.

16th.—No attack. To have one dose of Quinine about five hours before the attack generally commenced, viz., at about ten o'clock a.m. ℞ Quinæ Sulp. ʒj ; Spt. Ether Nitric, ʒiss ; and late in the evening to have Quinine, ʒss ; also to take in food, ℞ Arsenic, grs. ijss ; Ferri Sulph. ʒj. Under the influence of Quinine the pulse became intermittent, and I then gradually discontinued it, administering the arsenic and iron for some little time. The horse, which had slightly fallen away in condition, rapidly regained it, and in a month was quite fat and blooming.

My medical colleagues consider the attack to be due to impure water, large houses on the hills having to depend on rain water stored in tanks, and liable to be polluted by *débris* of various kinds.

FATAL DIARRHŒA AMONG HORSES AT CABUL, AFGHANISTAN.

BY J. A. WOODS, M.R.C.V.S., ARMY VETERINARY DEPARTMENT.

WHILE at Cabul, in 1880, twenty-eight cases of Diarrhœa occurred amongst the horses of the regiment (9th Lancers) then under my charge, during the latter part of the month of February, and the whole of the month of March, 1880, nine of which proved fatal. The duration of the disease in the cases varied from four to seventy-two hours. The stud-bred horses suffered most from the disease, as of the twenty-eight cases that came in to the sick lines, seventeen were stud-breds, one Cabulee entire horse, and ten "Walers." Six of the nine deaths were stud-breds, the remaining three were "Walers."

All the horses attacked were over eight years of age, except one, a six-years-old stud-bred. All attacked were in good condition—generally the best-conditioned horses in their troops, and in good health and spirits. There were no premonitory symptoms in any of the cases, the animals being suddenly attacked with Diarrhœa of a severe type, the evacuations, as a rule, being of a serous character, of a light-yellow, brownish-yellow, or greenish-yellow colour, and ejected about every twenty minutes with great

force. In some cases they were very fœtid, and in others almost odourless. The pulse in those cases that proved fatal was generally about 60 per minute at the commencement; but as the disease advanced, it went up to 100 or 104 before becoming imperceptible, which always happened a short time before death. In those cases that recovered, the pulse in the early stages was about 44 to 48 per minute, and rarely went beyond 70 or 80. In nearly all the cases colicky pains were present in the early stages, the pain becoming more continuous towards the end in the fatal cases. Directly a horse was attacked he was noticed standing with drooping head in the most listless attitude, with abdomen drawn up and back slightly arched, remaining in this position till the colicky pains came on, which was generally after the fæces had been passed, when he began to paw, look round to his flanks, sometimes roll—in fact, show all the symptoms of abdominal pain. There was always a great amount of fever present. In two cases I was able to take the temperature: in one it was as high as 106°, and in the other 107°; both of these cases recovered. I regret to say I was unable to take the temperature regularly, or in more than these two cases, as I had no thermometer of my own.

In all the cases, from the yellow condition of the visible mucous membranes, the liver was evidently affected; these membranes also were very much injected.

In several of the fatal cases that extended over twelve hours' duration, brain symptoms were present, the animals remaining down in a comatose condition, the head resting with the teeth on the ground, and the body being on one side. In one or two cases towards the end, the patients became delirious; the eye became glassy, and rolled in the orbit; the horse walking wildly round in a circle, neighing, and grinding the teeth, and then struggling violently, so that it was dangerous to approach him.

In those cases which recovered after the Diarrhœa had ceased, the most obstinate constipation set in, the patient often going four or five days without evacuating anything, and then only small quantities of fæculent matter came away, which was thickly covered with mucus; sometimes only mucus itself came away. Several of the cases after recovery showed symptoms of conges-

tion of the lungs, evidenced by a difficulty of breathing and a quick soft pulse. In one case the congestion rapidly ran on to inflammation of the lungs, and the patient, being already weakened by the Diarrhœa, rapidly succumbed. As a rule, the congested condition of the lungs readily yielded to treatment. Sore throat was invariably present, shown by a difficulty in swallowing. The appetite generally returned about the third or fourth day after the Diarrhœa had ceased; as a rule, the patients regained their strength rapidly, and in only two cases the disease appeared to have seriously injured the constitutions of the animals. In a few cases a suppressed and painful cough was present for a few days.

Post-mortem Appearances.—The abdominal cavity, on being opened, showed no appearances of peritoniteal inflammation. The stomach in nearly all the cases was quite full, no matter how long the case had been in the infirmary; the contents being food only slightly acted upon by the gastric fluids. The cuticular coat presented in some cases, at its junction with the villous portion, several ulcerated patches, which had completely gone through mucous and sub-mucous coats. These ulcers had ragged edges, and had generally a bright yellow tinge round the borders. In some cases several large tumours, varying in size from a pigeon's to a duck's egg, having a fibrous exterior and a cheesy interior, were found embedded in the sub-mucous portions of the villous coat. This coat (the villous) in those cases that occurred at first, presented a highly-congested and sometimes inflamed appearance; and in those that occurred later on, the mucous coat was almost completely destroyed, the destruction having taken place at times in small, and in others in large, patches, having very much the appearance as if acted upon and destroyed by some powerful irritant. I carefully examined the contents of the stomach as well as circumstances would permit, but was never able to discover anything of a poisonous nature. I had no means of applying chemical tests. The mucous coat of the small intestines was always very much congested—so much so at times that the capillaries could be seen, and gave the membrane or coat an appearance as if covered with minute black hairs; patches of inflammation were also to be found, especially towards the termi-

nation of these intestines. These patches varied from two or three inches to a foot in length. In one or two cases there was inflammation of this coat throughout its entire length. In places, the small intestines were so contracted on themselves, that their calibre was diminished to about one-fourth of their natural size; these contractions varied in length from a few inches to a couple of feet. Peyer's patches were very clearly distinguishable in many of the subjects. The mucous membrane lining the cæcum was always in a highly-inflamed state, the inflammation becoming more intense towards the blind end. In some cases this intestine contained a quantity of ingesta in almost a dry state, and adhering to the sides, and completely blocking up the end. The mucous coat of the double colon was always intensely inflamed, the inflammation sometimes extending to ulceration, and in one or two cases to gangrene. This intestine also, in some cases, presented the same contracted appearance noticed in the small intestines, the contractions, as a rule, taking place close to the curve. The double colon generally contained a quantity of fluid of a greenish or greenish-brown colour, with a very fœtid odour. The mucous coat of the single colon and rectum was always much inflamed. The liver was sometimes enlarged, but was always soft, and presented externally a yellowish-brown appearance; sometimes it was found dotted over with minute coloured spots. The spleen, as a rule, was slightly enlarged and very much congested, being filled with very dark-coloured blood. The heart was normal in appearance, but the ventricles were always filled with black fluid blood. The blood in all these cases was very dark-coloured, and showed little tendency to coagulate. The lining membrane of the air passages was congested, and the lungs themselves invariably presented a very much inflated appearance. In one or two cases the vessels of the brain were much congested.

Preventive Measures.—At first I thought the food, which at the time consisted of Indian corn as a grain ration, and boosa, by producing indigestion, was the cause of the Diarrhœa, and at once recommended an alteration to half Indian corn and half barley, a seer of bran to be given in lieu of a seer of Indian corn, when procurable, to each horse daily, and that every horse should get

too seers of dried lucerne every day, to be mixed with the boosa, which was done. I also recommended and obtained for each horse daily, to act as an alterative and stomachic, half an ounce of salt and a quarter of an ounce of black pepper, but neither this nor the alteration in the diet had any effect in checking the disease. At the same time the water was also examined, but nothing of an injurious nature could be detected in it. The men of the regiment obtained their water from the same source, a well close to the lines. I then recommended that the horses should be moved to a place about eight hundred yards off, on to a gravelly soil on the southern slope of the Bemaru Hills, which, after some time, was done, and the disease at once ceased.

Treatment.—When the disease first appeared, I tried to check the Diarrhœa with crude opium and catechu combined, a dram of each every hour, and sometimes every two hours, depending upon the severity of the Diarrhœa, but met with only indifferent success. I then tried the Tinct. Opii combined with the Spr. Ether Nit., in ounce doses, given every two hours, with tolerable success; the most successful mode of treatment I found was the Tinct. Opii and Ol. Lin., one ounce of the former to eight or twelve ounces of the latter for the first dose, and every hour or two hours afterwards one ounce of Tinct. Opii and four ounces Ol. Lin., till the Diarrhœa and pain ceased. All the cases from the first were treated with hot applications to the abdomen, and either the oil of turpentine or mustard well rubbed in. In some cases, when the abdominal pain was very severe, I gave chloroform in ounce doses, but cannot say I ever found it answer satisfactorily.

When the patients began to recover, I relieved the constipation, which was always present, with small doses of linseed oil, given three times a day, till the bowels began to act. In those cases which showed symptoms of congestion of the lungs, I found that the application of the oil of turpentine or mustard to the chest and sides, with the Ammon Bicarb. given internally, in two dram doses, soon afforded relief. When the constipation was relieved, all that was required to bring them round was good nourishing food and careful nursing.

The disease almost entirely confined itself to two troops, the

'D' and 'F,' which stood almost parallel to each other, in separate sheds, in the centre of the lines. The horses of these two troops were, at the time of the outbreak, in better condition than those of any other troop. They were fed exactly the same as the other horses of the regiment, and watered from the same well. When these two troops were moved out to the side of the Bemaru Hills, I had the flooring of the sheds in which they had been standing dug up, to a depth of one or two feet, and fresh earth put down. In digging up these floors, I found running through both of them a ditch about three or four feet deep, which had, before the shed had been built, been filled up with manure and refuse matter of all sorts, and covered over with a thin layer of earth about nine inches in thickness. On opening this ditch the effluvia that came from it was very bad, and the contents were found to be in an advanced state of decomposition. On examining the ground in the immediate vicinity of these sheds, I found two or three pits, several feet in depth, which had also been filled with up with the same materials as the ditch. These, with the ditch, I had thoroughly cleansed out, and then filled with fresh clean earth, in which was mixed a quantity of McDougall's disinfecting powder. The horses of the two troops remained out for four weeks, and were then brought back; no cases of the disease have appeared amongst them since. The floors of all the sheds are dug up to the depth of little more than a foot every month, and fresh earth put down.

I am inclined to think that the disease was a blood poisoning, caused by emanations of an injurious nature, arising from these pits and ditch, and the fact of the disease ceasing immediately the horses were removed to fresh standings, away from the effects of any emanations that might have been arising in the old, tends to confirm me in my opinion. The disease could not have been caused by the food, as all the other four troops were fed with exactly the same forage, Indian corn and boosa; neither could it have been the water, as all the horses were watered from the same well. Had the animals been poisoned by substances administered in the food or water, the probability is that the percentage of deaths would have been greater, and the cases that occurred would not, I fancy, have been so exclusively confined

to the two troops; besides which, the horses were too well looked after for any unfair advantage of that sort to be taken, unless by the Syces, which was highly improbable, as they could derive no advantage from the deaths of the animals. The 3rd Bengal Cavalry, encamped on a piece of ground adjoining our lines, had six horses attacked with this disease, three of which died. The ground on which this regiment was encamped had been occupied by the 5th Punjab Cavalry during the whole of the winter months, and had become thoroughly soiled, and had in many places a depth of a few inches of nothing else than horse droppings. This regiment was moved out to a fresh encamping ground, and no fresh cases of the disease occurred.

Mr. Mitchell, V.S., R.H.A., asked me to look at some cases of Diarrhœa which he had in his sick lines, and which had appeared amongst the horses of 'F' Battery, 'A' Brigade, R.H.A., but it in no way resembled the Diarrhœa which had broken out amongst the horses of my regiment and the 3rd Bengal Cavalry.

EXTREME OVARIAN DROPSY IN A THREE-YEAR-OLD HEIFER.

BY G. GARTSIDE MAYOR, M.R.C.V.S., KIRKHAM, LANCASHIRE.

As the following case appears to me an uncommon one, I have ventured to lay a short account of it before the readers of the VETERINARY JOURNAL.

History, etc.—On April 1st of this year, I was requested to attend an animal which had been some hours in labour, the owner stating that he "could not feel anything in the passage." On my arrival, I found the case to be one of "breech presentation" in a well-bred three-year-old heifer (*primipara*). Without much difficulty, I rectified the position of the fœtus, and effected delivery, and as the fœtal envelopes came away in a very short time, and all appeared nicely, I left the animal to the owner's care, not expecting to hear anything more of it.

Three days after, I was again summoned to see the animal, and on my arrival at the farm (a distance of six miles), I found my patient almost in a state of collapse. Pulse 100, respiration

hurried; some degree of gastric tympany, fæces scanty and semi-fluid, urine normal, lacteal secretion nearly *nil*, appetite almost gone, and rumination suspended. There was an unduly full state of the abdomen generally, which hardly seemed that of flatulence, and could scarcely be caused by food, as the animal had taken very little since she calved.

I resorted to stimulants both internally and externally. On the next day there was extreme diarrhœa, sickness, and almost total inappetence.

Despite all my efforts, these symptoms continued (with varying severity) for over a fortnight, when my patient died. Almost to the last there was extreme thirst, the animal drinking gruel and milk freely.

Post-mortem Examination.—On opening the abdomen, my first impression was that I had a case of extra-uterine fœtation; for a large mass presented itself, having more the size and appearance of a gravid uterus than anything else I could compare it to. On examination, however, I found that it was the right ovary in an enormously distended condition, and on incising it there issued a tremendous quantity of serous fluid; I should think there must have been from fifteen to twenty gallons, if not more. The small intestines and a portion of the colon were attached to the capsule of the tumour by numerous strong bands of fibrous tissue and false membrane; the intestines were highly congested. All the other viscera were quite healthy, with the exception of being anæmic.

Remarks.—What appears to me most remarkable in this case, is the enormous volume the ovary had assumed, and the fact that the animal was only three years old, since, according to all that I have read upon the subject, ovarian dropsy usually occurs in old age.

On further inquiries I found that for some months past the animal had appeared unusually quiet, and always looked "full"; but as she was a good feeder, and apparently quite healthy, no further notice was taken of her.

The explanation which offers itself to my mind, as to why the symptoms of disorder were not manifested until after parturition, is the fact that the intestines, being closely attached to the diseased

ovary, were somewhat drawn from their position by the partial descent of that body, consequent on the evacuation of the uterus; hence, a continuous irritation was kept up. Also, I suppose that the accumulation of fluid in the ovary would probably go on more rapidly after the demands of the "fœtus in utero" upon the circulatory system were stopped.

[Ovarian dropsy in so young an animal is very unusual, and its development must have been very rapid. With regard to volume, the ovarian distention in this case appears to have been extreme; but this is not unusual, as instances are recorded in which the cyst has occupied the greater part of the abdominal cavity.]

FRACTURE OF THE OSSA CALCES DURING CASTRATION.

BY A. C. ROBERTSON, M.R.C.V.S., WORCESTER.

ON the 4th inst. we were requested to visit a colt, belonging to Mr. Deakin, of Eastborough, that had injured himself while being castrated. He was a strong, muscular, healthy-looking cart-colt, about three and a half months' old. He was cast, fastened in the usual manner, and operated on, after which he was unable to rise, and kept struggling until I saw him. Upon examination, I found there was a fracture of the os calcis of both hocks, and, considering the case a hopeless one, advised the animal to be destroyed. The fracture is a separation of the epiphysis of the tuberosity of the bone, about half-way across from behind forwards, then extends into the body of the tuberosity, obliquely downwards and forwards about one and a half inches, the piece being quite detached. The fractures of both hocks were exactly alike.

The accident occurred during the operation, from the severe struggling of the colt, and made a noise, the groom told me, like the snapping of a rope, first the one, then the other.

My partner, Mr. Perrins, and self, considering the case in its relation to casting our patients for castration, especially animals so young, "which many now advocate in order to lessen our casualties," and the accident being in itself at least a novel one, thought it might be considered worthy of record in the VETERINARY JOURNAL.

ANTHRAX FEVER, OR LOODIANAH DISEASE, IN INDIA.

BY J. MILLS, M.R.C.V.S., A.V.D., INDIA.

(*Continued from page* 176.)

Exercise.—This strengthens the various organs of the body, accelerates the circulation of the blood, increases the action of the secretive organs, and promotes the carrying off of effete materials. It renders the body less susceptible to the various changes of temperature, and enables it to ward off many forms of disease.

If exercise is regular and not excessive, it tends to develop and invigorate the power of the body and limbs. Therefore, a well-regulated amount of it ought to be given, so as to make the troop horse always ready and fit for hard work whenever he is wanted to perform it.

After having referred to what I consider should be done to prevent the disease occurring, we must now see what are the best means to employ when it breaks out, so as to arrest its progress.

1st. On the appearance of the first case, lose no time in vacating the lines and getting the horses all into camp.

2nd. When leaving the stables, all the grass and litter left behind should be collected and burnt.

3rd. For the camp select a healthy situation on a portion of rising ground, a good distance from where the disease broke out, as the change must be as complete as possible.

4th. Give the horses just double the picket room that they would have under ordinary circumstances.

5th. Entirely change the forage, more especially the grass, and give, if procurable, one pound of linseed daily to each horse in addition to the ordinary diet ; and above all, give plenty of salt, not less than half an ounce *per diem.*

6th. Choose a suitable site for the horse hospital, at the very least 500 yards from camp.

7th. Isolate the sick at once, with all their stable gear, together with the attendants, and prevent any intercourse taking place between these men and those in the horse lines.

8th. All food refused by patients should be burnt at once, as it might find its way to healthy animals, and it is certain to have some saliva on it, and we know that the saliva abounds with bacteria.

9th. The fæces and urine ought to be carried to a distance and buried in a deep hole.

10th. The cleanliness of the lines while out must be rigidly observed.

11th. Make a careful inspection at each meal.

12th. In the hospital, disinfectants must be freely used. Carbolic acid should be employed, as from its certain properties of destroying low animal life it will be found equally efficient in preventing as in curing the disease.

13th. The wearing of flannel nose-bags at night might be found to act beneficially, as, I believe, they were found very useful during the campaign in South Africa, in the prevention of Horse-sickness, or if a species of respirator could be constructed, one which would possess the power of being able to rid the air of its impurities in its passage to the lungs. I am certain that good would accrue from its use.

14th. After being in camp a few days, and if fresh outbreaks continue to take place, shift again, and keep doing so until the disease has disappeared.

15th. Do not return to cantonments again until you are perfectly satisfied that the outbreak has terminated, and that all the supposed causes have been removed, such as the well cleaned out, the stables disinfected and whitewashed, the floors properly relaid, etc., etc.

Disposal of the Dead.—As soon as possible after death, remove the carcase to the place of burial, which should be well away to the leeward, and at a considerable distance from the lines. Slash the skin well, and be careful to open the chest, abdomen, and bowels; if this is not done, when decomposition takes place in the grave, the body becomes distended with gas, which presses the soil upwards producing cracks, which allows the foul effluvia to escape.

The grave ought to be at least ten feet deep (the deeper the better), into the bottom of which throw ten seers (twenty lbs.) of

unslaked lime, and over the body twenty seers (forty lbs.) more, then have the earth thrown in and well rammed down.

All the line gear belonging to the dead that will burn, have it burnt, and the ironwork allowed to remain in the fire for some time. Where a patient has been standing, have the ground freely sprinkled with unslaked lime, and afterwards trench it to a depth of not less than four feet.

General Remarks.

Predisposition.—There seems to be no predisposing state for the reception of the existing cause, as it attacks animals irrespective of age, sex, caste, or condition; and although I have tried to show what class of subject (see Table No. 2) is most liable to this disease, yet I cannot say that any one more than another presents what may be termed a typical disposition.

If there is such a thing as predisposition in regard to this Fever, it will be found in animals of feeble health, or bad habit of body, worn out or exhausted from whatever cause, deprived of sufficient nourishment, or disordered by food of a bad quality, and living in low, unhealthy districts, exposed to various impurities of the atmosphere; all these tend to pervert the healthy vital functions, to introduce changes in the composition of the fluids and solids, and thereby to weaken that power of resisting noxious agencies with which the body is endowed in a state of health, thus creating a predisposition to disease; and in a country like India, where the existing profusion of malarial elements implants within the system the seeds of Fever, which originates its development in these deteriorated constitutions.

It is also to be presumed that insufficient attention to any of the rules of hygiene, wherever it might exist, would predispose the system generally to disease, and in a tropical climate especially to diseases of a febrile character. Therefore we may say that animals whose vital powers are weakened by any cause, are those most likely to become first attacked; consequently, when in such a state they are predisposed.

Whether or not some subjects enjoy comparative immunity

from such a scourge, is a question that will, I am afraid, remain unsettled, but demands profound attention.

Altitude.—I cannot say that I have heard of the disease occurring at high altitudes, although there is no reason why it should not occur in such situations, if they are rendered impure by improper sanitation; in fact, a case has come under the notice of Veterinary Surgeon Nunn, R.A., at an altitude of over 7,000 feet above the level of the sea; but this, I presume, must be the exception to the rule, as in elevated positions the prevalence of septic diseases of any description is less than in low-lying districts, and I should think the same rule is equally applicable to Anthrax Fever. Therefore we may state that no particular altitude enjoys immunity from it, but we can say with a certain amount of precision that it is very rare in such regions, as altitude is inimical to the development of many diseases, owing to the greater purity of the atmosphere, its freedom from organic matter, and the presence of ozone.

Loss.—The loss to the Government by the two outbreaks at Bareilly was, calculating the value of each horse at Rs. 500, or £43 15s, taking the rupee at 1s. 9d., exactly Rs. 5,500, or £481 5s, thus: nine horses died in 1877, Rs. 4,500; two horses died in 1878, Rs. 1,000; total, Rs. 5,500, or £481 5s.

This sum, small as it may seem, would add considerably to the price of new stables.

The conclusions which I have drawn from my inquiry into this disease are :—

1st. That it is a Fever of a most malignant type.

2nd. That it is due to the presence of bacteria in the blood.

3rd. That it is a most fatal disease, death claiming on an average about one in three, a higher ratio than is afforded by almost any other curable disease.

4th. That it generally occurs after the rainy season, after the soil has been inundated, or just when the water has subsided.

5th. That one attack does not give immunity from another.

6th. That animals attacked on the second occasion suffered less than on the first.

7th. That "walers" withstand the effects of the disease badly, 80 per cent. of those attacked having died.

8th. That a case may terminate fatally in from four hours to fourteen days, that is, giving the minimum and maximum time, taken from forty-two cases.

9th. That to prevent its occurrence, sanitation in its widest application must be minutely carried out in every detail.

10th. That it is of rare occurrence in India at high altitudes.

11th. That treatment must be prompt, and entirely of an antiseptic nature.

12th. That the disease is most likely to assume an aggravated form in previously unhealthy constitutions.

13th. That in such subjects the symptoms are most obstinate, and rarely yield to treatment.

14th. That the utmost care must be taken in making *post-mortem* examinations, to prevent infection or inoculation.

15th. That the burial of the dead must be carried out with the greatest exactness, and in strict obedience to the laws of sanitation.

In conclusion, I consider that these outbreaks only tend to show the necessity there is for some remedial measures, and, if possible, to institute some means whereby to check the large mortality which this disease claims. An inquiry ought to be set on foot, so as, if possible, to find out and carefully examine the causes, and the extent to which they prevail in the various districts where the disease has shown itself. It is, however, a pleasing duty to me to narrate the successful efforts that have been made in several parts of India, to annihilate the sources of this disease, and the more useful; as they show how entirely these evils may be subjected to human control by the exercise of foresight and management, combined with the proper application of sanitary science. There are many stations in the country where the disease formerly prevailed but now is unknown, where changes for the better have been introduced.

The good care and management of the troop horse, if we want to keep him in health, must be well assured by the appointment of men able and zealous in the discharge of their duties ; and I am confident that all efforts to improve his sanitary condition in India, by the building of proper stables, by laying down thorough systems of drainage, etc., may fail, may even end in a result

precisely contrary to what was intended, unless parallel endeavours are set on foot to extend a sound sanitary education to those under whose immediate care he comes. Let us also bear in mind that our duties are essentially of a preventive nature; it is, therefore, all the more incumbent upon us to devote a considerable portion of our time and our talent to the study of hygiene, and to its proper and scientific application, both in keeping up the natural standard of health, and preventing the invasion of disease.

Lastly, were many of my suggestions carried into effect, I do not doubt that the prevalence of this disease might be very much diminished. Many of the evils which I have pointed out are the inevitable results of improper sanitation, and I emphatically assert that this Fever and many other diseases are the inseparable accompaniments of bad stable management.

No. 2.—Table showing a few particulars of outbreak (R.A., 1877).

Strength of Battery at time of Outbreak.	Stud.		Waler.		Total Number Attacked.	Stud.		Waler.	
	Mares.	Geldings.	Mares.	Geldings.		Mares.	Geldings.	Mares.	Geldings.
115	24	41	13	37	26	6	15	3	2

Total Number Cured.	Stud.		Waler.		Total Number Died.	Stud.		Waler.	
	Mares.	Geldings.	Mares.	Geldings.		Mares.	Geldings.	Mares.	Geldings.
17	3	13	1	0	9	3	2	2	2

Percentage of "Caste" on Number of Admissions.	Stud.	Waler.	Percentage of Attacks on Original Strength.	Stud.		Waler.	
				Mares.	Geldings.	Mares.	Geldings.
Stud ... 21 Waler ... 5	80·7	19·2	22·6	25·0	36·5	23·0	5·4

Percentage of Deaths on Original Strength.	Stud.		Waler.		Percentage of Deaths on Number of Admissions.	Stud.		Waler.	
	Mares.	Geldings.	Mares.	Geldings.		Mares.	Geldings.	Mares.	Geldings.
7·82	12·5	4·8	15·3	5·4	34·6	50·0	13·3	66·9	100·0

Percentage of Cures on Number of Admissions.	Stud.		Waler.		Average time during which those that died were under treatment.			Average time during which those that lived were under treatment.			Average age of those that died		Average age of those that lived.	
	Mares.	Geldings.	Mares.	Geldings.	Dys.	Hrs.	Min.	Dys.	Hrs.	Min.	Yrs.	Mths.	Yrs.	Mths.
65·4	50·0	86·6	33·3	·0	2	7	10	5	3	21	8	7	10	7

The facts adduced in the above table may serve to give an approximate estimate of the effects of this Fever on the various classes of animals attacked; but I am well aware that a more copious induction of facts, from observations made during a series of years, would be necessary to establish any positive conclusions. It, however, appears to me important to refer to this table for the purpose of ascertaining the comparative proportion of deaths that have occurred amongst the different classes of animals affected, with a view to consider how far it may be necessary to apply greater care and attention to those most susceptible to the disease; therefore I have drawn it up to enable a comparison to be made without difficulty.

Editorial.

THE EDUCATION OF VETERINARY STUDENTS.

WITHIN a few days the Veterinary Schools will be opened for the winter term of instruction, and it may not therefore be amiss to briefly consider the subject of the education of the students who enter these schools—a subject which has been frequently discussed in this journal, and one which must be of perennial interest to those whose sympathies for professional advancement are sincere and deep. For no one who knows anything at all of the requirements of a competent practitioner, can for a moment doubt that on the degree of education, both general and

technical, of those who receive the diploma of the Royal College of Veterinary Surgeons with a view to practise animal medicine and surgery, must entirely depend, not only the position they will hold in public estimation, but also the progress which must be made in their calling. The great and most beneficial change effected in the condition of veterinary medicine in these Kingdoms, by the Act of Parliament of last year, renders it absolutely necessary that the profession should do everything in its power to prove itself worthy of, and grateful for, the benefits that Act confers upon it, and the confidence the public has placed in its efforts, present and prospective, to improve this very important division of medicine and economical science. The Royal College of Veterinary Surgeons, as representing the entire body of the profession, is responsible to the public for everything relating to the education, proficiency, and professional conduct of those whom it licenses. It is therefore urgently necessary that this responsibility be recognised and acted upon, and that no cause for complaint against the Corporation should arise from any neglect in the discharge of its duties. The Royal College has already taken an important step in this direction, by insisting upon, and ensuring that those who are to receive its licence should possess a fair general education. Perhaps of all the causes which have been in operation in the past in preventing members of the Royal College from attaining that *status* which they had a claim to, none has been so potent as the defective general education rightly or wrongly attributed to them by the public. It is imperatively necessary that every candidate for the diploma shall be educated to at least a minimum uniform standard in those branches of education which will fit him to practise his profession with the greatest advantage to it, himself, and the public. Without a sufficient amount of education it is impossible that the student can beneficially pursue those studies, upon a correct appreciation and knowledge of which his future reputation and success will depend; neither can he bring anything but discredit upon his profession when he has graduated. The chief distinction between the farrier and cowleech and the graduate of the Royal College, should lie in the superior education and professional knowledge of the latter; and if the qualified and unqualified practitioners have only too often been confounded or put on the same footing by the public, this has been due to the fact that there was sometimes only too little to distinguish them from each other. If complaints have been loud and deep that hitherto we have not had justice done us, and that we have not been granted that acknowledgment which our position as members of a profession should have secured for us, we have only to inquire whether the neglect, or something worse, to which we have been subjected has not been largely, if not entirely, owing to our own indifference or supineness in this matter of general education. As a result of that inquiry, we think it will be found that—

> "The fault is not in our stars,
> But in ourselves, that we are underlings."

Without a good general education now-a-days, a profession, such as medicine, cannot be profitably studied; and if it is not profitably studied

it cannot be profitably practised. A defectively educated practitioner is of questionable value to the community, and at the best he brings only too frequently discredit upon his profession. Education was never so cheap as at present, and it is placed, by legislative enactment, within the reach of all. It is therefore incumbent upon the Royal College that it discharge one of its most pressing functions, by affording a guarantee that every one of its licentiates is at least as well educated, generally, as the great majority of non-professional people. A good education is easily carried about, and, so far from unfitting a man for being a competent veterinary surgeon, we unhesitatingly assert that without it a veterinary surgeon cannot be a scientific practitioner. It is certainly not too much to expect that every candidate for admission to the profession shall afford evidence that he possesses a good English education —such as will secure for him the confidence and respect of his clients, and enable him to assume and maintain the position accorded to the members of other professions.

With regard to professional knowledge, as has been already said, without a good education before entering a veterinary school this cannot be satisfactorily acquired. The subjects to be studied require a well-trained mind to comprehend, and this training is afforded by previous education. Besides, to the imperfectly educated student the very language of science is more or less confusing and incomprehensible, and in the brief time allowed at the schools there is not sufficient opportunity allowed to master it. Every year the study of medicine is becoming more exacting and intricate, and demands highly-trained faculties.

Without entering into the question of the subjects of study at the schools, nor the time which should be devoted to them, it may be stated that the most important—viz., anatomy, physiology, pathology, surgery, and therapeutics—should be as thoroughly acquired as possible. Without a full and exact knowledge of these, practice must always be more or less empirical and unsatisfactory. Above all things, a practical knowledge of all the subjects should be obtained. The futility of attempting to become a good practitioner by merely listening to lectures, reading books, or watching others manipulate, is too patent to be discussed here. Hence the absolute necessity for students, before graduation, acquiring, to as great an extent as possible, a notion of the practical details of their profession. This the schools cannot give, and it is only by spending some time with a good practitioner who has a varied practice that it can be obtained. Even more than the practitioner of human medicine and surgery, the veterinary surgeon needs a special practical training, in addition to the instruction he receives at the veterinary school; and the need for this training has become all the more imperative from the fact, that future graduates will be severely tested and criticised when replacing the unqualified practitioners who are extinguished by the Act of Parliament—a class of men who had to rely mainly for their success upon the use they could make of their hands.

What we sincerely wish students could acquire at the veterinary schools, in addition to a thorough knowledge of the principles of

veterinary medicine and surgery, is a durable and fervent enthusiasm for the profession they are about to enter. Without this no profession can flourish, and no progress can be made. A calling which is scarcely second to any in its usefulness, in its humane and humanizing tendencies, in its scientific importance, and in the large interests confided to it, surely merits the same enthusiasm, the same learning, and the same devotion and labour which have raised human medicine to the proud position it at present holds. The veterinary profession is now free and untrammelled, and if it is not endowed and maintained by Government, neither is it fettered and confined by Government control and dictation. It is left with ourselves to make it what we think it should be, and therefore it devolves upon us to see that we are doing all we can, by the careful training of future practitioners, to ensure our profession a brighter future than its past history foreshadowed. Success is within our reach if we will only make an effort to secure it.

ANTHRAX INOCULATION ACCORDING TO PASTEUR'S METHOD.*

BY PROFESSOR C. F. MULLER.

Being the results obtained from some experiments carried out by order of the Prussian Ministers for Agriculture.

When it became known in Germany that Pasteur had so successfully prevented Anthrax, by inoculating animals with artificially cultivated virus, and that the inoculating fluid—vaccine—could be obtained from Pasteur's laboratory through M. Boutroux, 28, Rue Vauquelin, Paris, Professor Dr. Roloff, the director of the Berlin Veterinary School, sent for some to experiment with. Instead of receiving the lymph, however, he received a note stating that M. Pasteur would very much like to have the opportunity of carrying out the first experiments in Germany himself, as great care was needed for correct results, and so, if possible, prevent any untoward symptoms. M. Pasteur, therefore, voluntered to carry out the experiments for the Minister of Agriculture if he wished it. His offer was accepted, and Professor Roloff made the necessary arrangements for the work.

Professor Roloff chose a place called *Packisch*, where Anthrax had prevailed to a large extent for some time. During

1879-80,	7	horses	62	head of cattle,	and	22	sheep
1880-81,	1	„	18	„		12	„
1881-82,			4	„		52	„

succumbed to the malady.

The outbreaks were more rife when the cattle grazed on certain parts of the field, or when these parts were mown for stall-feeding. The farmer had used this field as the burial ground for those of the animals which succumbed, whilst others he put in a manure-heap, which he spread about the field. By choosing such a place as this, where we might say Anthrax had its home (indigenous), it gave a good opportunity to test the immunity given by

* Translated from the "Archiv für Wissenschaftliche und practische Thierheilkunde," Band VIII., Heft 4 and 5, p. 319. By G. A. B.

Pasteur's method against natural infection, and also to ascertain how long such protection lasted.

The animals to be experimented upon were placed in a barn (some 500 paces from the infected farm), which had not before been used to house cattle, and therefore might be considered free from the poison of Anthrax. Moreover, the wooden sides and the cement floor were well limewashed.

Twelve head of cattle and fifty sheep were obtained for the experiment; half were inoculated with Pasteur's cultivated fluid, whilst the other half remained as test animals (Controlthiere), to control the correctness of the results. The cattle were placed in the right half of the barn, whilst the sheep were placed in the left. Of the cattle, four were Bavarian working oxen, two pregnant cows (in order to test later on whether the offspring were also protected), two young cows (which had only had their first calf a few weeks previously), two young fifteen months' old bulls, which, as is known, have a great predisposition for Anthrax, and two heifers about twelve months old.

These animals had been up to March 31st, 1882, in a part of the country where Anthrax had not been seen for a long time.

The fifty sheep had also been in a similar situation up to the 31st of March, 1882. When they came to Packisch they were from two to two and a half year's old ewes.

During the experiments these animals were fed with food produced on land free from Anthrax, in order to avoid any infection taking place by eating food grown in Packisch. The cattle were fed on wheat, straw, and roots; the sheep had hay in addition to this.

The Minister for Agriculture gave out the programme for the experiments, with which M. Pasteur agreed. The members of the commission appointed to watch the process and results of the experiments were: Geheimer Ober-Regierungsrath BEYER; Geheimer Medicinalrath PROF. DR. VIRCHOW; Graf ZIETEN-SCHWERIN; Medicinalrath PROF. DR. DAMMANN, director of the Hanover Veterinary School; Amtsrath ZIMMERMAN; Oberamtmaun RIMPAU; Departements-thierarzt OEMLER, who was present at all the inoculations, and Kriesthierarzt ZIEGENBEIN, during the first. Further, Medicinalrath LYDTIN was present at the first protective inoculation, and Geheimer Medicinalrath PROF. DR. LEISERING and Landesthierarzt PROF. DR. SIEDAMGROTZKY at the second protective inoculation, and at the controlling inoculations.

Shortly before the experiments commenced, Prof. Dr. Roloff became unwell; therefore, Prof. Muller undertook to be present to guide and report the results of the experiments.

The first protective inoculation was performed on April 5th, 1882, by M. Thuillier (assistant in Pasteur's laboratory).

Both the members of the Commission and M. Thuillier were convinced that the twelve head of cattle were perfectly healthy. Their internal temperatures varied from 38·2 to 38·7° C. Six of them (viz, two Bavarian working oxen, one pregnant and one milking cow, one young bull, and one heifer) were inoculated, whilst the other six remained untouched for the purpose of controlling the correctness of the experiments. Each of the twelve animals were distinguished by having the Roman figure I.—XII. branded on the hair under the right hip. Those inoculated were marked with the odd Nos. I., III., V., VII., IX., XI., whilst the controlling animals were distinguished by the even numbers.

All the fifty sheep were also considered perfectly healthy, and in fair condition. M. Thuillier thought it would be unwise to experiment with all the sheep so soon after being brought into a fresh place, and receiving different treatment and strange food; which, as is well known, frequently has a tendency to produce derangement in the system, and so cause mis-

takes. Therefore, only thirty of the fifty sheep purchased specially for the experiment were used, and twenty others were taken from a flock in the neighbourhood.

M. Thuillier considers that all sheep whose internal temperature is 39·5°C. or over, are not fit to be inoculated. The temperature of the twenty-five chosen for inoculation varied between 38·3°C. and 38 4°C. These were numbered with black paint 1 to 25. The fifteen from those purchased specially being 1 to 15, whilst the ten from those obtained in the neighbourhood were numbered 16 to 25. The remaining twenty-five animals, which were left to control the correctness of the results, were numbered 26 to 40 and 41 to 50 respectively.

The twenty-five animals that were inoculated were placed in a separate compartment, and had no communication with the twenty-five animals used to control the experiments.

The primary vaccine fluid, as it is called, or that which was used to inoculate the sheep, was preserved in glass tubes the shape of an ordinary test-tube, with the top or open end drawn out to half the diameter of the tube itself, and plugged with a caoutchouc cork. The inoculation was performed by means of a small subcutaneous injection syringe, holding about 1 ccm. of fluid. The operation was performed just outside the building where they were kept. Each sheep was placed in the sitting posture, the fore limbs being firmly held by an assistant, with the abdomen of the sheep facing the operator. M. Thuillier injected about $\frac{1}{6}$ ccm. of the inoculating fluid into the subcutaneous tissue of the inner side of the right thigh. The time occupied in inoculating the twenty-five animals was about a quarter of an hour.

The cattle which were marked with the odd figures were operated upon whilst standing—each animal received about $\frac{1}{2}$ ccm. of the cultivated fluid under the skin, behind the left shoulder-blade. The twelve animals were then housed in the following order—between two control animals was placed one that had been inoculated.

After this first inoculation, no sign of disturbance was noticed, either in the general health, internal temperature, or localiy at the seat of inoculation.

The second protective inoculation with the "secondary vaccine," or that which is a little stronger, took place on April 19th, 1882, after the Commission had satisfied themselves that the animals were perfectly well. The operation was conducted in the same manner, except that the left thigh of the sheep and the right shoulder of the cattle were the points selected.

April 20th. All the inoculated animals showed a rise of the internal temperature of 1 to 1·5°, and one sheep registered 2° higher. Several of them appeared dull. Some of the cattle were swollen hard and tender at the point of inoculation, and the thighs of six of the sheep were slightly swollen and of a bluish-red colour.

April 21st. Several of the animals were unwilling to move, liked to lie down, and ruminated little. The internal temperature had fallen in the cattle and the sheep 1 to 15°, whereas that of the sheep numbered 16 to 25 was higher. The sheep numbered 20 ate and moved tolerably lively about the stall at 1.30 p.m.; at two o'clock it was breathing heavily, and died in half-an-hour. As soon as the animal was dead the blood from the vena saphena of the right hind-leg was examined microscopically, and it was found to contain a great number of Anthrax Bacilli, and the *post-mortem* demonstrated, without doubt, that the sheep died of Anthrax.

April 22nd. The temperature of the cattle and the sheep (3 to 17) was normal; the remaining sheep ranged between 41·1° to 41·8°, and they lay down persistently. All the animals fed well.

April 23rd. The above-mentioned changes at the seat of inoculation in most of the cattle were very much reduced, while those in the sheep had

nearly disappeared. Ox No. 3, however, was rather stupid in the head, and showed great dulness, and at the elbow there was an œdematous painful swelling. Sheep Nos. 2, 7, and 24 were dull, moved lazily and breathed quickly, although the appetite appeared good. Some blood was taken for microscopical examination from the ears of these animals, but no *Bacilli* could be discovered. On the other hand, sheep No. 18 had a high temperature (41·9°), conjunctiva very red, quick and laboured breathing, complete loss of appetite, foaming at the mouth, and lying down. The blood from the ear was microscopically examined at three and five o'clock, and found to contain Anthrax *Bacilli*. The animal died soon after five, and the *post-mortem* showed positively that the sheep had died of Anthrax.

April 24th. Ox No. 3 had quite lost its appetite, was exceedingly dull, and lame of the right fore limb. The swelling on the right elbow had increased in size, and was proceeding under the breast. The sheep Nos. 7 and 24 were much the same as yesterday, whilst No. 2 was somewhat livelier. The blood from these animals showed no signs of *Bacillus Anthracis*.

April 25th. The sheep No. 24 had a high temperature (42·1°C), refused its food, lay down continuously, and could only be made to rise with difficulty; when made to move it reeled with the hind extremities. The conjunctiva was of a light-red colour and highly injected. About ten o'clock heavy breathing set in, and an hour later the animal died.

Sheep No. 7 had diarrhœa, the fæces being covered by a shining gelatinous, frequently red-coloured coating, which chiefly consisted of swollen epithelial cells. The animal remained in the recumbent position, only rising to feed, ruminated slowly, and ate very little food; when pressure was applied to the abdomen the animal grunted, and showed signs of pain.

Ox No. 3 ate better; the swelling in the elbow was hard and painful, little or no weight being borne by the limb.

April 26th. The autopsy of sheep No. 24 presented all the characteristics of Anthrax, the blood teeming with *Bacillus Anthracis*.

Ox No. 3 had completely recovered, with the exception of the swelling on the right elbow and œdema of the inner side of the fore-arm of the same limb. This swelling had quite disappeared by the 29th.

Sheep No. 7 gradually improved from this day, and on the 28th was considered as quite well.

From the foregoing, we find several of the cattle and sheep became very unwell after the second inoculation, and that the sheep Nos. 20, 18, *and* 24, *died from inoculated Anthrax on the second, fourth, and fifth days respectively.*

Further, it is noticeable that the sheep (Nos. 16 to 25) which were purchased in the neighbourhood (Packisch), were those mostly affected, for the three animals that died belonged to that flock.

A yearling and a lamb, which had showed no signs of the disease, were inoculated with the blood taken from sheep Nos. 18 and 24, twenty and twenty-six hours after their death. No Bacilli could be detected in their blood at the time of the inoculation.

In order to procure the requisite material to control these experiments, a sheep was inoculated on May 3rd at the Berlin Veterinary School, with virulent fluid sent by M. Pasteur from Paris. The sheep died in about thirty-six hours of Anthrax, the blood being microscopically examined. From this animal M. Thuillier collected some blood from the right side of the heart in glass tubes, about 1 cm. wide and 25 cm. long, and sealed one end up by drawing it out to a fine point; in the other he placed a pledget of wadding. Before he filled these tubes, however, he heated them to 220°C., in order to destroy any germs they might contain. In this way he transported the blood to Packisch.

On May 6th, 1882, M. Thuillier, Departements-thierarzt Oemler, and Prof. Müller visited Packisch, and convinced themselves that the twelve head of cattle and the forty-seven sheep were perfectly healthy (after the death of the sheep Nos. 18, 20, and 24), and that the numbers which distinguished them were plainly visible. Those sheep numbered 1 to 15, and 26 to 40 were in better condition than on April 5th ; whilst Nos. 16 to 25 and 41 to 50 had gone back in condition. The blood which M. Thuillier brought from Berlin was diluted with an equal quantity of water (which, however, he boiled and allowed to gradually cool, before he mixed it), and with this fluid he inoculated these animals. Each sheep received 0·1 cm. under the skin on the inner surface of the left hind limb, and the cattle ·25 cm. in the subcutaneous tissue of the right shoulder. The inoculation was performed alternately on an animal which had been previously protected, and on one which had not been so protectively inoculated (control-animal).

Those animals which had been previously inoculated with the protective material remained perfectly well.

Their appetite remained good. At the seat of inoculation a hard nodule formed, about the size of a hazel-nut. This, however, had all disappeared again by May 14th.

May 7th. The control-animals, Nos. 6, 8, and 10, showed signs of dulness in the afternoon, and refused their food. The internal temperature of No. 2 was 38·2°C., the others varied between 40·5° and 41·3°.

On May 8th No. 12 showed no signs of illness, although the others moved languidly and lay down more than usual. The muzzles were hot, and the extremities were sometimes hot and at other times icy cold, the respiration was quickened and laboured, rumination was performed slowly, and long intervals elapsed between each.

No. 10 refused all food, but the others ate small quantities. The internal temperatures were taken at 4 p.m., and ranged from 38·5° to 40·7° C. The hair of the poorest was rough and dull. Nos. 4 and 6 had diarrhœa. No. 10 had constipation. No Bacilli could be detected in their blood.

The heifer No. 10 died during the night from May 8th-9th, being about fifty-eight hours after inoculation with the Anthrax blood.

May 9th. The pregnant cow, No. 6, refused all food this morning, and stood away from the crib, with the head sunk, and passed a small quantity of watery fæces with much straining; breathing 44 per minute, weak and languid. Muzzle hot and dry. Extremities icy cold. Visible mucous membranes very red. Occasionally twitching of the muscles of the hips and shoulders was seen. At 7.30 a.m. the pulse was 90 per minute, small, and weak ; the internal temperature 41·3° C. Bacilli could not be detected in the blood. At 10 a.m. the cow began to reel about and breathe heavily, and died sixty-eight hours after the inoculation with Anthrax blood. Directly after death a frothy bloody fluid ran from both nostrils, and the fæces which were expelled by the *rigor mortis* were mixed with blood. Ox No. 2 presented similar symptoms, and died in strong convulsions at 4.30 p.m., seventy-four hours after being inoculated. Its blood was examined at 10 a.m., but no signs of *Bacillis Anthracis* could be discovered.

The bloody frothy fluid from the nostrils and the mucus from the rectum were examined directly after death, and found to be teeming with Bacilli.

Nos. 4, 8, and 12 were not so lively as usual, nor did they eat very well. At 10 o'clock the internal temperature was 38·9° to 39·4° C. The seat of inoculation in the cow No. 8 was swollen and œdematous.

May 10th. Nos. 4 and 8 refused all food, were continually down, and showed great weakness. After much straining some small, hard, black fæces were passed. The poorest animal, whose hair was rough and dull, stood with arched back, frequently grinding its teeth, and trembled all over.

Internal temperature 41·4° and 39·2° C. The extremities were alternately hot and cold, and the visible mucous membranes highly injected. The places of inoculation were œdematous and swollen, the latter extending in No. 8 as far as the knee. The blood showed no signs of Bacilli.

The bull No. 12 appeared to be well, although the coat was rough and dull, and the animal stood with arched back ; internal temperature 38·3° C.

May 11th. Nos. 4 and 8 were better, in so far that they looked brighter about the eye, took a little food, and ruminated. Their internal temperature was 40·5° and 39·3° respectively.

May 12th. Nos. 4 and 8 still improving; they ate well and ruminated freely. Fæces natural, but small in quantity.

May 14th. Quite healthy again, except that the swelling in the cow's (No. 8) shoulder increases, is very painful, and she can scarcely move the limb. No Bacilli could be seen in the blood taken from the swelling. The swelling had not completely disappeared on June 1st, 1882, and was somewhat painful.

The controlling sheep, Nos. 26 to 50, commenced on the morning of May 7th to move slowly and lazily, to lie about, to eat less food and ruminate less frequently, and altogether to show signs of general ill-health. The first sheep died twenty-one hours after the inoculation ; and the deaths followed so quickly that in the evening of May 7th, twenty-one to thirty-four hours after the inoculation, sixteen sheep had died of inoculated Anthrax.

May 8th. (Thirty-five to fifty-three hours.) Eight sheep died, and the only one left (viz., No. 35) although very ill remained alive until the night of May 9th-10th, *i.e.*, eighty-four hours after it was inoculated. Both the blood and the mucus from the nostrils were found teeming with *Bacillus Anthracis*. The sheep generally died in convulsions, whereby a bloody fluid was forced from the nose, red-coloured urine from the bladder, and from some of them a blood-coloured fluid came from the anus during the *rigor mortis*.

The *post-mortem* examination of three of the cattle and several of the sheep was carried out by Oemler, in the presence of several of the members of the Commission, and proved that they died of Anthrax.

The blood contained enormous quantities of *Bacillus Anthracis*. The blood, taken from the spleen and navel cord of the fœtus out of cow No. 6, did not contain any Bacilli.

These experiments demonstrate that Pasteur's protective inoculation gives the animals so inoculated complete immunity against Anthrax. On the other hand, they furnish us with no satisfactory results respecting its practical utility and use from an economical point of view, since three of the sheep (or twelve per cent.) died of Anthrax, the effects of the protective material.

MM. Pasteur and Thuillier, however, remarked that such a large percentage of deaths is not usual, and it was very remarkable ; for a large number of sheep have been inoculated in France with the same kind of material, without any being seriously ill, or dying. M. Pasteur was of the opinion, that the race or breed of the animals must have something to do with these losses, and he wished to have an opportunity of testing it. The Minister for Agriculture fell in with his view, and put the whole herd of sheep in Packisch at his disposal, in order that he might make further experiments and find out to what extent the sheep were protected by inoculation from the influences which were so rife in producing the frequent outbreaks of Anthrax in that district. To obtain this end, both the inoculated and non-inoculated sheep were placed during the summer and autumn in the pastures where Anthrax had been most frequent. In order to prevent infection taking place before complete immunity had been given by the action of the protective inoculation, the whole flock was taken to a district free from Anthrax (Bor-

schütz), there inoculated, and brought back to Packisch at the end of fourteen days.

The flock consisted of 256 ewes, varying from three to seven years old, and 226 lambs, born during March and April, 1882. They were taken to Borschütz on May 6th, and on May 10th they were divided into two lots. The one consisted of 128 ewes and 123 lambs, the other 128 ewes and 103 lambs. The latter half were marked by punching a round hole through the right ear, and were left uninoculated, whilst the first half (viz, the 128 ewes and 123 lambs) were inoculated with Pasteur's cultivated protective fluid.

M. Thuillier inoculated them by injecting $\frac{1}{3}$ ccm. of the (*premier vaccin*) fluid under the skin of the inner surface of the right thigh.

It was impossible to take the temperature of 251 sheep every day, therefore fifteen sheep and fifteen lambs were set apart for that purpose ; besides, the temperatures of those which showed evident signs of illness were also measured.

None of the animals presented any signs of illness from May 10th to 20th, and only in exceptional cases did the thermometer register 40·0°C. to 40·4°C. As a rule it was 38°C. to 39°C., and in a few cases it sank to 37·5°C., and often rose to 39·4° C. to 39·8° C. No changes were noticed at the points of inoculation.

On May 20th, 1882, the *second* protective inoculation took place (with the *deuxième vaccin*), after the members of the Commission had convinced themselves that the 128 sheep and 123 lambs were healthy. The operation was performed in the *left* thigh, and 0·1 ccm. of the fluid was injected in each case.

When the operation was finished, it was found that 129 ewes were inoculated, the extra one being one of the uninoculated half of the flock, that had jumped over the partition. This animal was, therefore, inoculated with the more virulent fluid (*deuxième vaccin*), and we will distinguish this animal as No. 129.

Most of the sheep presented evident symptoms of general disturbance the next day (May 23rd). They walked lazily, appeared dull, lay down, respiration quicker, and allowed themselves to be handled much more readily than those which were not inoculated. The temperature was in a great number of cases raised, and in several cases on May 23rd, 24th, and 25th reached 40° C. and 41° C. No change was observed in the appetite and rumination. In a few days several of them showed a small, hard, painless nodule, the size of a small hazel nut, at the seat of inoculation. The sheep No. 129 was ill the day after it was inoculated. On May 22nd the temperature was 41·3° C., and on the 23rd 41·4°C.

May 26th. All appearance of ill-health had disappeared in all the inoculated animals.

At 11 a.m. on May 27th, one of the inoculated ewes suddenly died, although no signs of disturbance was detected at 8.30, when the herd was driven out. Soon after death a bloody frothy fluid exuded from the nostrils, and Oemler found by *post-mortem* examination that the animal died from inoculated Anthrax.

On May 30th a test experiment was performed in Packisch with twelve ewes and twelve lambs from the herd which were inoculated on May 10th and 20th ; also with six ewes and six lambs from the uninoculated half of the flock. One-half was inoculated with the blood (mentioned above) obtained from the sheep at the Berlin School, which died on May 29th, after being inoculated with some virulent fluid from Pasteur's laboratory ; the other half were inoculated with the virulent fluid which gave Anthrax to the sheep at the Berlin School. Both these lots were marked, so as to be easily distinguished.

M. Thuillier diluted the blood from the sheep with water, the same as when he used it on May 6th.

Two of the sheep which had been inoculated before were operated upon, and then one of the control-animals, by injecting 0·1 ccm. of the fluid into the subcutaneous tissue of the inner surface of the left hind-leg.

M. Thuillier also inoculated three head of cattle, Nos. 4, 8, and 12 (which had recovered from their illness the result of the inoculation of May 6th) with the virulent fluid from Pasteur's laboratory. Each received about 0·2 ccm. of the fluid under the skin of the left side of the neck. No signs of ill-health followed, nor were there any local lesions to be seen, showing that the previous inoculation had completely protected them against the disease.

All the above-mentioned *control*-sheep (viz, the six ewes and six lambs) died from inoculated Anthrax. Nine died on May 31st, twenty-five to thirty hours after the operation, and three died during the night of May 31st and June 1st. The symptoms, *post-mortem* appearances, and microscopical characters of the blood were exactly the same as described above in those that died from the first experiments. No difference was observed in the time which elapsed between inoculation and death in those inoculated with Anthrax blood and those inoculated with Pasteur's virulent fluid.

The twenty-four sheep which had been previously protected against the disease, presented on May 31st and June 1st no symptoms of illness, nor any changes at the seat of inoculation, although the internal temperature in some cases was high—as a rule, about 41·5°, but one sheep registered 42·4° C. However, one lamb died on June 1st, forty-eight hours after the inoculation, without showing any previous signs of disease; the temperature on that morning was 39·4° C. The *post-mortem* was carried out at once, and revealed unmistakable Anthrax.

The remaining twenty-three sheep were apparently well during the next few days, with the exception of a lamb, which was in bad condition and weak. On June 12th another lamb died, which had shown signs of slight deviation from health since the day it was inoculated (May 30th). The *post-mortem* examination gave similar results to the last mentioned. Oemler, therefore, declared that the lamb died of Anthrax from the effects of inoculation fourteen days after it was performed.

Several of the sheep presented a painless, hard nodule—about the size of a hazel-nut—at the seat of inoculation, which had not quite disappeared by the middle of June. Oemler, moreover, was convinced that several of them (especially the lambs) had gone back in their condition since the inoculation took place.

On May 20th and 21st, according to the wish of Amtsrathes Lücke, the following were inoculated at his own risk :—

At Borschütz, twenty-six working oxen of the Bavarian breed, some of which had been there for some time, whilst the others were freshly purchased.

At Schweditz, twenty-six head of young cattle, most of them a little over one year old (twenty-four being females and two males).

At Packisch, one bull and sixteen working oxen, which had been a long time on the same farm.

All these animals were inoculated by injecting ·2 ccm. of the weakest (*premier vaccin*) cultivated fluid, under the skin of the right side of the neck. This part of the body was selected instead of the shoulder, in order to prevent any lameness resulting from the swelling which sometimes occurs at the seat of inoculation.

None of the seventy-eight head showed any signs of disturbance, except a slight rise of temperature the day after the inoculation took place, and no changes occurred in the neck.

On May 30th and 31st the second inoculation was performed with the stronger (*deuxième vaccin*) cultivated fluid. Departementsthierarzt Oemler, assisted by M. Thuillier, injected the fluid under the skin of the left shoulder of the bull and on the left side of the neck of the other seventy-seven head, exactly the same as on May 20th and 21st.

On June 1st and 2nd and following days, most of the animals lay down a great deal, and some refused their food and appeared dull. The internal temperature, as a rule, had risen to 40·0° C. or 40·8° C. Several nodules had formed at the points of inoculation. In a few days these symptoms had again disappeared. The swelling on the shoulder of the bull remained the longest, and reached as far down as the arm. On June 12th Oemler found all the animals had gone back in condition.

The fifty-two head of cattle which were inoculated at Borschütz and Schweditz, as well as the sheep, were brought to Packisch on June 8th, 1882. The non-inoculated portion of the flock did not return to Packisch until the end of July.

We will now endeavour to point out the inferences that may be drawn from the results of both these sets of experiments.

1. Cattle which withstand inoculation with the cultivated material, do not contract the natural form of the malady.

2. The weakest cultivated fluid (*premier vaccin*) did not produce any signs of disease, either in the cattle or sheep.

3. The second inoculation with the more virulent cultivated material (*deuxième vaccin*) produced a decided rise of the internal temperature and illness, although it was not, as a rule, fatal. At the seat of inoculation various-sized nodules or swellings formed, which were either painful or painless.

None of the cattle died after the second inoculation ; but three sheep died out of the twenty-five used for the first experiment, and one of the 251 sheep used for the second experiment.

4. The controlling experiments with the blood of an animal that had died of Anthrax, and with the virulent fluid from Pasteur's laboratory, produced only a slight disturbance in the cattle and sheep that had been previously protected by the cultivated fluids ; but those animals that had not been so protected became very ill indeed. Out of the twenty-five sheep in the first experiment, which had been inoculated with the protective cultivated fluid, none died ; of the twenty-four in the second experiment, two lambs died. One succumbed fourteen days after inoculation, but both were very weakly animals, which may, to a great extent, account for this unfavourable result.

Is Pasteur's method advantageous and to be recommended? and how far may we consider it so? Before these questions can be answered, it must be first ascertained how long this immunity lasts.

No opportunities have yet been given for fixing the duration of immunity, because it is only during this year that the method has been practically carried out on any large number of animals. Up to the present time, the only knowledge we possess is, that sheep which had been protected seven months before, showed complete immunity against inoculation with Anthrax blood, but this immunity did not extend to the lambs which were born soon after the protective inoculation was performed upon the ewes. M. Thuillier says experience has demonstrated in France that the protection lasts at least for nine months.

The above experiments at Packisch will be valuable assistance in solving this question. As is observed above, Anthrax is always prevalent in that district ; the place is quite isolated, and contains only cattle which have been protected by Pasteur's method, and sheep, half of which are protected, the other half not being inoculated. The great losses the farmers have had at

Packisch from this malady have made them take the greatest care to put in force any measures by which it could be checked. Places where animals that had died of Anthrax were buried were carefully guarded. The animals which were stall-fed received boiled or cooked food, and those animals which were used for working purposes wore muzzles to prevent them feeding on the field where they were working. Now, all these precautions are discontinued, and both the inoculated and uninoculated sheep are turned out in the field which had the reputation of being the most deadly pasture, and those places where bodies had been buried are no longer guarded. If they are exposed in this way during the present and next year, it will be the means of ascertaining how far they are protected from the local infectious influences, and also how long such immunity lasts. Besides this, an animal will from time to time be inoculated with Anthrax blood, to see whether it has become susceptible to the poison.

For the present, it may be said that on large farms, where Anthrax is continually present, it would be economical and advantageous to inoculate them with the protective cultivated fluid, especially the cattle, for it is not so dangerous to them as to sheep, and their loss is of most importance to the farmer. It is to be hoped that improved methods will soon be discovered, and that inoculating sheep will be attended with fewer deaths.

The protective inoculation is so very simple that no practical veterinary surgeon would find any difficulty in carrying it out ; but it requires care in handling the fluid and the syringe used for the purpose, directions for which accompany the fluid sent by M. Boutroux. These set forth that the syringe, etc., should be perfectly clean when the fluid is injected under the skin ; for, if any dust, or water which had not been boiled, is introduced with the cultivated fluid, other diseases might be produced, such as Septicæmia ; at any rate, the results of the experiments might be questioned. The fluid should be kept as cool as possible until it is required for use, and should be used as soon as convenient after the tube is opened—at least, on the same day. The syringe should always be filled, so that no air bubbles are present, and it should be disinfected after being used. M. Thuillier, when carrying out the experiments at Packisch, was very particular in having a new syringe, or one freshly prepared, etc., after each set of experiments.

TUBERCULAR PARASITISM IN THE DOG, AND THE PATHOLOGY OF FOLLICULAR TUBERCULOSIS.

In the *Recueil de Médicine Vétérinaire* for July, the director of that journal, M. Bouley, in publishing some "notes" presented to the Académie des Sciences on Tubercular Parasitism, remarks, that there are *spontaneous* facts which, understood and interpreted, are superior, by reason of the conditions of *complete independence* in which they are produced, to those afforded by experimentation, for the solution of biological problems. What is Tuberculosis? What is the cause of the formation, in certain tissues, of those small disseminated nodules which stud them, and substitute their indurated substance for that of the organ itself? With regard to this matter, the presentiment has long been entertained, that these abnormal formations might be the indication of local irritation at each of the points where they were observed ; and in order to imitate nature, foreign substances in a state of fine powder have been injected into the circulation, in the expectation that the particles arrested in the minute capillaries might play the part of the *irritating thorn*, the material existence of which was to be conceded as a condition favourable to the formation of the tubercles. In fact, in

a certain number of these attempts the results obtained confirmed the inductions which had previously arrived at with regard to tubercle being an inflammatory lesion, depending on a local irritant action. These inductions have now become an established truth, the demonstration of which is given more clearly by *natural* facts than by those of experimentation. Those published by Professor Koch, of Berlin, are very demonstrative in this respect. The *irritating thorn*, which for a long time had only been a metaphor, or at least a hypothesis, has been detected by him; it is a bacterium, which he has been able to cultivate, and the real action of which he has been able to demonstrate by inoculations that have been followed by the *systematic* formation of tubercles in the organs inoculated.

A very fine observation made by Professor Laulanie, of the Toulouse Veterinary School, as a proof of another kind in support of the idea that the tubercular lesion in itself is only the expression of a local irritation, the agents giving rise to which may be diverse without the lesion being different. In Koch's observations, the *irritating thorn* is represented by a bacterium, which constitutes one of the forms—the specific one—of Tuberculosis; in the observation of Laulanie, the *thorn* is quite different—it is an ovum, or the embryo of a nematoid worm, the *Strongylus vasorum* of Baillet, around which is formed the indurated nodule that has been named a *tubercle*. "The ova, or embryo, arrested in the fine arterioles become," says Laulanie, "the point of departure of a nodular arteritis, combining in its structure the characters assigned, since the time of Kœster, to the elementary follicles of Tuberculosis. There is found, in fact, in the centre of each nodule an ovum, or an embryo, fixed in the giant cell. The latter is surrounded by a coronet of epitheloid cells, more or less abundant, and an external embryonic zone, which frequently tends to a fibrous formation."

Laulanie has been led by this fact, which he has closely examined, of the spontaneous, but nevertheless artificial reproduction of follicular Tuberculosis under the morbid influence of the ova of a nematoid worm, to a conclusion already arrived at by others—that is, the negation of the "*anatomical specificity of tubercle.*"

The following is the very interesting note on this subject, which Laulanie communicated to the Académie of Sciences, at its sitting on January the 2nd, 1882.

"I have recently had occasion to observe, in the lungs of a dog, the alterations produced by the ova of a nematoid worm, the *Strongylus vasorum* (Baillet), the identity of which with those of Tuberculosis appears to me to be of great interest. But before adducing the facts which are the principal object of this note, it is, I believe, indispensable to trace, in a few words, the principal phases in the migrations of the strongle of blood-vessels, so far as they are known, or at least so far as it is possible to infer from my observations.

"The strongles of blood-vessels live, *in the adult state*, in the right ventricle of the heart, and the larger divisions of the pulmonary artery in the dog, where they are found in more or less voluminous clusters, male and female. These masses infallibly give rise, at the part where they are located, to an endo-arteritis, the exudate of which assumes the form of cords or anastomosing layers, which maintain the parasite cluster *in situ*, and prevent it being dislodged by the blood current. It is in these central parts of the pulmonary circulation that the strongles couple, and the fecundated ova, as they are expelled from the female worm, are carried into the finest and most distant ramifications of the artery which contains the adult entozoa, and there they undergo the various phases of their development. The embryos are hatched in the interior of the arterioles or capillaries, and soon emigrate to the smallest-sized bronchi, where they are found in great numbers,

in sections of lung tissue, examined under the microscope. The presence of embryos in the bronchi (though they have not yet been discovered there), leads to the supposition that they are expelled from the respiratory passages, to be afterwards received into the digestive apparatus of another dog. The lungs, the vessels of which are filled with strongles, are studded with small, grey, semi-transparent, salient granules, which give a pearly or nodulated aspect to a section, and from their physical characters and great number realise all the appearances of *Granulie* (Granular Phthisis). There is, nevertheless, an important peculiarity, relative to the localisation of the parasitic granulations, which accumulate at the base of the pulmonary lobes, and become more and more rare towards the apices, where they almost completely disappear. This localisation, which is the inverse of the lesions of Tuberculosis, added to the well-known immunity from Phthisis of the canine species, suffices to prevent confusion.

"I have attentively studied the histological characters of this false Tuberculosis, until now unrecognised, and the conclusions at which I have arrived naturally pertain to the discussion now going on with regard to the anatomical specificity of tubercle and its pathogenesis. But I shall confine my observations to the more general facts, and to the conclusions which naturally arise from them.

"The ova or embryos arrested in the fine arterioles, become the starting point of a *nodular arteritis, combining in its structure all the characters which, since the days of Kœster, have been assigned to the elementary follicles of Tuberculosis.* There is found, in fact, in the centre of each nodular mass *an ovum or an embryo imbedded in a giant cell.* The latter is surrounded by a more or less abundant circle of epitheloid cells, as well as an external embryonic zone, which frequently tends to become fibrous.

"The details just referred to, with respect to the *habitat* of the strongles and the different phases of their development, are sufficient to demonstrate that the cellular group, formed by the giant cell and its surrounding ring of epitheloid cells, have an intravascular origin, and proceed from the endothelium of the obliterated vessel. But we may, on the other hand, frequently enough perceive the continuity of the latter with the follicle, and note that its lumen is suddenly increased where the giant cell is found; it is even possible to see the preliminary alterations which lead to the formation of the follicle. At a certain distance from the latter, the vascular endothelium is hypertrophied, and its elements project into the interior of the vessel; while in the vicinity of the follicles they proliferate, and form a column of epitheloid cells, in continuity with those which envelop the giant cell. Consequently, we have undoubtedly a nodular arteritis possessing the structure of the elementary follicle which Kiener described, some time ago, under the names of *tuberculous miliary aneurism*, or *ensheathing nodule.**

"I may add that the preceding phenomena, occurring most ordinarily in vessels close to each other, form composite nodules which have the most striking analogy to the tubercular *plexiform angioma* of the same author, if their development had taken place around vessels of new formation.

"Certainly, the vascular theory of the follicle is based on a sufficiently imposing *ensemble* of researches to ensure its being definitely accepted; and the facts of which I now present a summary analysis seem to me to be less a supplemental demonstration than indirect testimony in a new form, related to the experiments of M. Hippolyte Martin on Experimental Tuberculosis.†

* De la tuberculose dans les séreuses, chez l'homme et les animaux inoculés; par M. Kiener. "Archives de Physiologie" (Nos. 5 et 6); 1880.

† Tuberculose des séreuses et du poumon. *Pseudo tuberculose experimentale*, par M. Hippolyte Martin. "Brochure de Physiologie," No. 1, 1880.

The spontaneous, but nevertheless artificial reproduction of the tubercular follicle, under the common influence of the ova of a nematode, leads us again to a conclusion already arrived at otherwise—*i.e.*, the negation of the anatomical specificity of tubercle. It therefore appears to me legitimate to conclude :—

"1. That the specific agent of Tuberculosis acts in the same manner as the ova of the strongles, and its initial action is brought to bear upon the vessels in which it circulates.

"2. That the tubercular follicle is nothing more than a nodular vascularity.

"3. That it is destitute of anatomical specificity.

"In a future note I shall offer a certain number of facts tending to establish the mode of development, and the signification of the giant cells."

The note of Laulanie drew from Professor Colin, of the Alfort Veterinary School, another note, read at the meeting of the Académie de Médecine, on April 11th, claiming priority as to the parasitic nature of these pulmonary nodules. He points out that so long ago as 1866 he had described the tuberculous affections of the sheep and cat as due to the embryo of strongles or filaria in the lungs, and that all the facts he had observed since that time had led him to consider the tubercle of Verminous Phthisis as a product of the irritation produced in the pulmonary tissue by helminths. On April 25th Laulanie replied to Colin's *revindication*, pointing out that, in making known the histological characters of the pseudo-tubercles produced in the dog by the *Strongylus vasorum*, he showed that this nematoid resides in the right side of the heart and the large divisions of the pulmonary artery of that animal, and not in the bronchi of the sheep and cat, like the nematoid described by Colin, the lesions he had described deriving all their interest from the particular *habitat* of the strongle, whose ova are detained in the arterioles, and there produce the nodules of Arteritis, a certain number of which offer the characters of the elementary follicles of Tuberculosis.

Between the facts observed by M. Colin and those reported by M. Loulanie, observes Professor Bouley, there is this common character, that the pulmonary lesions—apparently tubercular—are due in both cases to the irritant action of nematoid worms, which play the part of foreign bodies at the points where they are arrested, determining around them the inflammatory process which was manifested by the tuberculous nodosity. But what gives the observation of Laulanie a character of originality, which distinguishes it from that of Colin, is that in the first the etiologic condition of the formation of pulmonary nodositis—in appearance tubercular proceeds from the blood—*i.e.*, the internal medium, and not in the external medium, as in the cases observed by Colin. So far as the interpretation of the phenomena of true Phthisis is concerned, it possesses a very interesting peculiarity, which gives a key to the evolution of the natural phenomena. It being demonstrated by direct observation that in a well-marked case the tubercular nodosity owes its formation to the intra-arterial foreign body while the ova of the strongle really is within the vessel, the significance of this nodosity can readily be understood, and we are logically led to consider it as the expression of a local irritation, proceeding from an agent held in suspension in the internal medium. And the recent researches of Professor Koch, of Berlin, seem to have determined this agent, which is a bacterium that acts as an irritating thorn, and produces the tubercle ; while in Laulanie's observation it is the ovum or the embryo of the vascular strongle. Professor Cornil has testified that Laulanie's observation is perfectly exact, and also that it is entirely novel.

PROTECTIVE INOCULATION FOR TYPHOID FEVER (INFLUENZA ?) OF HORSES.

THE most interesting event of the Hygienic Congress, whose sittings have just terminated at Geneva, has been Professor Pasteur's address. As is well known, the illustrious *savant* has made some very important discoveries in the attentuation of the virus of transmissible diseases which promise to lead to results of incalculable benefit to mankind and animals. Until another opportunity offers, we will here only give a brief abstract of the address, in order to direct attention to a most important announcement the Professor made with regard to the serious disease of horses which has been designated by our French colleagues Typhoid Fever, and which in this and other countries is usually known as Influenza or Horse-plague.

The Professor began by saying that he was glad to accept the invitation sent him by the Committee of Organisation, as it enabled him to give another proof of the kindly relations existing between his country and Switzerland, and also because he hoped to meet there honourable opponents devoted to the cause of progress and science.

Our first knowledge of virus was that of Fowl Cholera, which we have succeeded in attenuating and preserving, with a view to transferring it to healthy fowls in order to protect them from the disease. This modification was obtained by exposing the virus to the oxygen of the air. The facts relating to Fowl Cholera were subsequently applied to Anthrax. (Pasteur here rather violently attacked Dr. Koch, of Berlin, who was present, and who is directly opposed to Pasteur's theories on scientific grounds)

The Professor then mentioned a series of experiments which he had made with the saliva obtained from two children and a workman affected with Hydrophobia, and which he had employed to inoculate rabbits. It proved that the disease could be transmitted by means of this virus successively to different animals. He stated that the *Bacilli* or *Microbes*, cultivated apart from oxygen, became more and more virulent, while when exposed to oxygen they became gradually attenuated in their virulence.

The principal object of his communication was to prove that this fact proceeded from an exact law, susceptible of numerous applications. The point to be ascertained was whether the microbe of the virus of Hydrophobia is present, and whether it has had time to develop another virus which alone is capable of causing death, and leading to confusion in the results obtained. The experiments in this direction were laid before the Academy of Medicine, and were confirmed by those made by Dr. Maurice Regnault, at the hospital of Saint Eugène. From the careful observation of all these facts, the existence of this microbe is established.

The Professor then went on to prove that the presence of the microbe was the cause of Hydrophobia, and to reply to the attacks of Dr. Koch and his followers. He stated that several points of his communication had not yet been published, and he called attention to the parallelism between the experiments relating to the microbes of Fowl Cholera and those of the rabific virus. This microbe re-appears in the blood. So far, three very different microbes have been discovered : that of Fowl Cholera ; that of Anthrax ; and that of Hydrophobia. But a fourth had recently been discovered by him, which will still further tend to prove the general law already referred to ; this is the microbe of the Typhoid Fever of horses—a disease which, during the recent epizooty, had destroyed 1,500 horses belonging to the Paris Omnibus Company. The nasal mucus of diseased horses, when inoculated into rabbits, developed this same Typhoid Fever in them, and which was recognisable by the same pathological symptoms as are found in

ordinary Typhoid Fever. The Professor, however, did not pretend that the relation between the microbe of this epizooty and the development of Typhoid Fever in horses, had yet been proved. A sufficient degree of attenuation had been obtained to yield a virus which did not produce the fever, but prevented it.

We had here a general law relative to inoculation, and a general method of application. We might well hope that these principles would lead to the discovery of a new remedy.

Dr. Koch was invited to reply. The Prussian Minister of Agriculture had appointed a commission of experts to examine this question, and experiments on a large scale had been made at Berlin. It was of great importance to learn how the contagion of Anthrax was communicated to animals grazing on land in which diseased creatures had been buried. The spores had been found in the earth brought up by worms.

At the close of this address, of which the above is a very imperfect *résumé*, Dr. Koch answered briefly in German, to the effect that he would not enter into a discussion in a language which was understood by only a portion of the Members of the Congress, but reserved his right to reply through scientific publications.

EXPERIMENTAL RESEARCHES IN ANTHRAX.

PROFESSOR FESER, of the Munich Veterinary School, has for several years been investigating the different forms, as well as the special features, of Anthrax, at the experimental station established for that purpose in Upper Bavaria, and the results of his researches up to 1879 have recently been given. These refer more especially to what is known as Carbuncular emphysema, Symptomatic Anthrax, or "black quarter"; to the influence of alpine pasturage; and to the influence of water, in the production of the disease in those localities in which it prevails.

Feser was the first in Germany to insist that this malady is altogether different to Splenic Apoplexy or Milzbrand, and more dangerous than that disease; that it is an infective malady due to vegetable organisms; that young and badly-nourished animals are most predisposed to its attacks, and that it can be most readily communicated to them by subcutaneous inoculation of the blood, exudates, juice of flesh, etc. Simple inoculation of these is usually without result. He also maintains that Parturient Septicæmia (Parturient Fever) is absolutely identical with it, so far as macroscopical and microscopical lesions are concerned. The *Bacteria*, *Bacilli*, or *Schyzomiceti*, which produce these maladies have no need for oxygen to live and grow; on the contrary, the prolonged action of oxygen upon them diminishes, at first, their vitality and virulence, and finally renders them harmless.

The tissues of animals which have died from this Carbuncular emphysema preserve their virulence, even after complete dessication.

A most careful examination of the herbage growing in the marshy pastures of the Alps, where the disease prevails, has demonstrated the existence of *Bacilli* and *Schyzomiceti*, morphologically similar to, if not identical with, those of Splenic Apoplexy and Carbuncular emphysema. These organisms were injected beneath the skin in forty-three animals—chiefly sheep and rabbits, and of these thirty-six were unaffected, while seven died—two rabbits, a sheep and a mouse, of a septic affection identical with this Carbuncular emphysema or Symptomatic Anthrax: one (a sheep) of Tetanus, another (a rabbit) of Pyæmia, and another (a rabbit) of Splenic Apoplexy. These

artificial cases of Splenic Apoplexy and Carbuncular emphysema did not differ in any respect from the diseases as naturally produced.

Researches and experiments made with the water of these infected regions, led to the belief that it had no influence on the development of the malady; though, of course, if the water chanced to be stagnant, and contaminated with the excretions of diseased animals, the reverse was the case.

THE PREVENTION OF CRUELTY TO ANIMALS IN INDIA.

BY R. POYSER, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, "THE CARABINEERS."

(Continued from page 197.)

STARVATION and exhaustion, not unfrequently resulting in death, are other forms of cruelty arising from want of food and clothing, from overwork and general mismanagement.

Thousands of camels have thus perished, and amongst gharry horses, ekka and grass cutters, ponies and donkeys, such cases are very numerous.

The calf is subjected to a most systematic process of starvation from its very birth, its natural sustenance being demanded for and supplied to the household and market; this form of cruelty I think is most heartless, because it is, as it were, premeditated, and so prolonged. The practice is a shameful abuse of man's power and right over the lower creation, inflicted as it is upon the young and delicate little suckling, unable to maintain itself independently of its mother, for whose nourishment a proper substitute is not furnished; if it were, there would not be much roomfor complaint. I do not mean to say that death usually results from starvation in these cases, though I have known it to do so. Somehow or other many survive this inhumane ordeal, though the fact of their doing so does not warrant the practice any more than does the object, in itself, for which they are starved. Nothing but the fear of the law will tend to diminish a form of cruelty which is imposed on no other young and helpless animal, except the goat, without provision being made for the substitution of a suitable food.

The abandonment of sick, lame, and disabled animals to die a lingering death, through which means perhaps disease is maintained and spread, is another act of inhumanity amounting to cruelty, common wherever the Hindoo religion prevails.

Can anything more piteous and revolting be witnessed than a poor dumb animal down and unable to rise or move—owing to a broken limb, for instance—left to perish by the roadside from pain and starvation, to be pecked by birds and gnawed by dogs and jackals long before life is extinct, when the friendly bullet or knife might so quickly and mercifully dispose of its sufferings? I think not; but I have seen more cases than I can remember, and applied the merciful remedy whenever possible. The improper conveyance and packing of animals, whereby they suffer from want of ventilation, food, and water, and injure each other in their struggles for air and a comfortable position, or anything done during transit to cause unnecessary pain, constitute cruelty, and such offences are indictable and punishable.

The following instances are practices of a cruel nature to be seen in all our markets, bazaars, and our own compounds and cook-houses:—Tying fowls by their legs, three and four together in a cluster; carrying them head downwards, and ducks and geese by their necks or wings; tying hares' legs together and sewing up their mouths; huddling large numbers of small birds together in the bottom of a bag, as is done with quail, pigeons, and

others; knocking out the teeth of animals captured and trained for exhibition, as is practised upon performing bears and, I am told, monkeys; dragging out the long wing feathers of pigeons and other birds to prevent their escape, when clipping would suffice; twisting and locking one wing round and behind the other or tying them above and close to the body; setting fire to straw underneath horses, camels, and bullocks, by which they are brutally charred and burnt; smearing dogs with kerosine, setting fire to it, and turning them loose—a most atrocious example of which is reported by "Spectator" as having occurred in Lahore on the 27th May; and what is worse, this is the second atrocity of the same kind by the same person; branding with a hot iron the skins of animals shortly to be slaughtered, when marking with indelible paint would be sufficiently permanent to frustrate any fraudulent intention of the dealer or butcher—if that is the object for which municipal and other authorities adopt the searing process, which is well known to reduce the market value of the hide and to injure it for the manufacture of leather; branding the skins of horses and bullocks with a hot iron for purposes of identity, pedigree, classification, registration, and rejection, is carried on to a much greater extent than need be; it produces not only an unsightly disfigurement, but the denuded and injured surfaces do not well bear the pressure and chafing of harness and saddlery, for which reason many horses in the army, for instance, are often thrown out of work. If branding is at all necessary in India the cruelty might be minimised, for which there is much scope in well-known places. Horns and hoofs could often be selected as branding sites; they are sufficiently permanent for many cases.

Natives are in the habit of searing and scoring with hot irons the skins of horses and oxen for all kinds of lameness and supposed affections, as well as for superstitious reasons, and thereby inflict a vast amount of needless pain and suffering over extensive surfaces.

This class of cruelty arises out of ignorance, as does the searing with a heated iron the tender palate of a horse's mouth to destroy what is termed "Lampas," or a fulness just behind the upper front teeth, a condition very often imaginary, and invariably a symptom of fever, dental irritation, or other ailment, and which disappears on their subsidence. At the worst, a few lancet cuts only are necessary.

Burning the opposing surfaces of the horse's front teeth to reproduce the lost marks which are the natural indications of youth; and punching out the temporary teeth of three and four years old horses to give them an appearance of older ones, are cruel and fraudulent practices adopted by dealers.

Then what shall we say of "tail-twisting," of the knotting and gnarling of the ox's tail, until it is literally screwed off at its base, or so injured as to hang in a paralytic condition to the end of the creature's life, utterly useless for the main purpose ordained by nature, and only used as as an instrument of torture against its possessor? I do think a mean and abusive advantage is taken of this useful and ornamental appendage of the docile and patient "byle;" it is a liberty which I venture to say would be taken with few other animals, for reasons which I need not point out.

From the pain inflicted, he tries to escape by hurrying on his load—and this is a proof of the cruelty—and when he has forgotten the pain and relaxes into his naturally slow pace, it is only to have the screw again applied. Tail-twisting—especially in byle-racing—is, I dare say, as justifiable as the higher art of flogging and spurring in horse-racing, the motive being encouragement rather than punishment: but the result in each case is painful and not humane, though both are time-honoured inflictions, sanctioned by custom, and regarded as essential to the success of one thing, as the light flick of the driving-whip is to that of another.

The bullock-driver is in the habit of goading his beasts with a stick armed

with a sharp iron spike, and amongst natives the use of spiked bits in horses' and ponies' mouths is very general, and often inflict considerable injury on the jaw, and always severe pain.

The use of the bearing-rein does, without doubt, restrain the freedom of a horse's movement, and keeps his head in an unnatural and uncomfortable position so long as the rein is hooked on to the saddle stud.

Its abuse converts it into a rigid, unyielding instrument of torture. The bearing-rein, like the standing martingale, is not to be entirely condemned; both are objectionable, and limit the power and movement of a horse, but are sometimes necessary for the safety of both man and horse: it is quite possible to use them effectively without causing pain or much inconvenience.

Used, as I have seen them, with spiked bits, is a double infliction of cruelty.

Under the attractive denominations of sports and pastimes, which sometimes involve destruction of life, and almost always suffering, a great number of barbarous customs still prevail in India, which I am sorry to say receive the countenance and tolerance of English society. The prince of one native state entertains the prince of another, or a British assemblage, with a series of contests between animals kept for fighting purposes, and the lower orders of the people perpetrate similar atrocities on a smaller, though, perhaps, no less cruel scale.

Last Christmas, at his installation, the Guicowar of Baroda entertained a large and distinguished party of English ladies and gentlemen, with elephant, bull, and ram fights. As regards the elephants, the cruelty imposed is not limited to the onslaught and struggle between the contesting animals, but they are goaded with spark-pointed lances, and lashed with whips, and have live furzes flashed on them in certain encounters. These horrible scenes, and more horrible human conflicts where the combatants' hands are armed with claws, are graphically described in a work called, "India and its Native Chiefs," but it refers to the days of the deposed and exiled Guicowar.

But what I now relate comes from an eye-witness.

In the case of the bulls, the sight of each other was sufficient to excite a conflict, during which their horns became locked, and one was wrenched off. Rams are always keen to fight, and those who witnessed such brutality could not have helped wincing and feeling sick, when the combatants' heads came together with a battering crash.

Sir James Ferguson, who is patron of the Bombay Society for the Prevention of Cruelty to Animals, would not stay to see these cruel sports, to which he is said to have expressed his aversion.

If the remainder had discountenanced them by declining to be present, the reason would have suggested itself, or been conveyed to the host, who, at his impressionable age, might have received a salutary and lasting lesson on behalf of humanity.

In this category of entertainment must be included, and condemned, dog-fighting, cock-fighting, duck-hunting with dogs, quail and other bird fights, practices diminished by the influence of the law at home, and preventible by it in India.

Pigeon and parrot shooting from traps is neither a noble nor elevating occupation; though fashionable, it is often cruel. Maiming and blinding pariah dogs with a shot-gun, and hunting them with heavy whips and spears, are also cruel procedures, far removed from sport.

The camel suffers intense agony from the insertion of a wooden billet or plug through his nose, and is further tortured by being tied by a cord running from that plug to the tail of another camel.

The nose of the camel, like that of most animals, is highly sensitive, to which he bears vocal testimony when it is dragged by the driver or the preceding camel.

For baggage purposes, nothing but a halter and rope are necessary.

We profited by the lesson taught by the Afghans, whose camels move independently and free, and during the late war hundreds of these wooden instruments of torture were removed from our camels.

The Afghans, too, understand the constitution and capabilities of camels, and know how to march, feed, and manage them; but, allowing for all exigencies connected with an invading, occupying, and retiring army, experience forbids my passing the same compliment on our own treatment and management of this most useful and indispensable transport animal.

The nose-peg and cord are probably essential to guide and control the riding camel; at any rate, this method could hardly be given up until a more humane and equally satisfactory one has been invented.

The "twitch" is an implement, the cord of which is twisted tightly round the horse's nose, and often unnecessarily and inconsiderately used; it should be discarded as much as possible, though it is a valuable aid in subjugating a horse during minor operations, and it helps to ensure the safety of the operator and attendants.

It is requisite to use severe restraining agents to render our domesticated animals obedient, tractable, and useful, but it is our duty, and should be our pleasure, to guard against the abuse of such instruments as the bit, the whip, the spur, the nose-peg or ring, and the iron crook which the mahout employs in driving and managing the elephant.

The most frequent and palpable evidences of cruelty are wounds and bruises, the result of injuries, the galling, chafing, and pressure of harness, saddlery, and the yoke, under which the sores in the majority of cases are found.

I shall not attempt their detail, but merely say that such are aggravated by working whilst in this state, by low condition, by ill-fitting and rigid harness, by starvation, climate, by flies, by improper treatment or no treatment at all, and ignorance and general carelessness.

There are a few operations considered by some to be beautifying to the victims, but which should be opposed as being cruel, excepting disease or some other excuse equally justifiable can be shown to exist. I allude to the cropping of dogs' ears and tails, examples of which are to be seen wherever British troops or communities reside.

No justifiable plea can be advanced for the practice of these common and fanciful mutilations: they may give an air of smartness to a dog, but are neither useful nor ornamental.

In England it is an indictable offence to crop the combs, wattles, ears, and tails of animals, and I hope ere long to be able to say the same for this country.

I have now to condemn almost absolutely an operation, once very prevalent in England, but at the present time only performed on sufferance. I mean the amputation of horses' and ponies' tails, usually termed "docking." Since "Polo" has become so popular a game, docking has very much increased in India, indeed it is so very fashionable, that one seldom sees a pony, amongst Europeans, that has not been curtailed, the only object being to smarten appearance, which it effectually does in most cases. Even the native dealers have recognised the necessity of pandering to the public taste in this respect, and amputate the tail of almost every pony that comes to hand.

Excepting in the case of disease or malformation, or where a horse has acquired the annoying and dangerous habit of throwing his tail over the

reins (even in this instance the driving bar could be raised), docking is unnecessary, and therefore cruel, for it is not only attended with pain, and may bring on lock-jaw and death, but it is often clumsily performed, and it deprives him of a means of defence against the annoyance of flies, and the torture of stinging insects.

Shortening the tail-hair, and not the bony and fleshy stump, suffices for all practical purposes.

I trust I shall not incur the displeasure of the lover of the "bob-tailed" pony, but surgery in these days is very *conservative*, and very properly condemns so *radical* an operation as "docking."

I regard the destruction of starving, diseased, homeless, and ownerless dogs as cruelty justifiably inflicted, unless they can be otherwise more humanely disposed of.

Their very existence in cities, bazaars, and villages is a cruel one: moreover, they are dangerous to mankind, obstructive to traffic, and very loathsome objects to behold.

Now, as regards sport. Whatever arguments may be advanced in justification of the pursuit of wild animals, I look upon it as wantonly cruel to run a fox or jackal or any other creature which has been maimed or injured by the means employed in its capture, or that has suffered in any way by subsequent confinement. It is also equally, if not doubly cruel to deprive a bird of its chance of escape by removing a portion of its feathers, for the sake of training hawks. And I say this because I hold that all animals chased, under the title of sport, by other animals physically stronger, bolder, swifter, and generally more numerous, should start on the best possible terms, and at least have the opportunity of saving their lives, and nothing can justify any means adopted to render that chance impossible.

I have no intention of trespassing on the debatable grounds of sport or the pain connected therewith, but will quote the Bishop of Carlisle on "Our Moral Duty to Animals." After confessing that he had never been a sportsman, and therefore had no special temptation to regard the question from a party point of view, which I think he had, he says, "When I happen to see the hounds, my sympathies are with the fox. Nevertheless, it is quite clear that the instinct of sport is so deeply rooted in the natures of the masses of mankind, that to regard the chase or shooting in the light of a cruel amusement would be almost universally deemed ridiculous; that the love of sport is a remnant of an instinct implanted in man for good purposes; that it is unnecessary to man in a state of civilization, and that in all probability it will fade away by degrees and finally vanish; that it is a relic of the wild epoch of man's nature, and will one day be regarded as strange and barbarous.

"Yet, while the love of sport remains, it is not altogether unreasonable that men of science should refer to the toleration of pain connected with field sports, as an argument for caution and fairness in dealing with pain connected with experimental investigations.

"The principal remark, however, which I have to make on the subject of all sport, whether field sports or otherwise, which are now tolerated, is that I see no course open to the law but to leave them alone. It is conceivable that there may be incidental cruelties introduced which the law might properly restrain; but, speaking generally, it would clearly be impossible for the law to interfere, with advantage, in a matter in which interference would be opposed to nine-tenths of the population."

He concludes his paper, which sets forth very moderate views, by saying that "when we look at the total number of convictions in England in 1881, viz., over 4,000, we can scarcely help feeling strongly that it is well that a Royal Society for the Prevention of Cruelty to Animals exists, and that it is a sad thing that its existence should be necessary. On the whole, however

I am disposed to believe that the public opinion on the subject is sound; even the extravagant views, as they seem to me, of the extreme anti-vivisectionist, are, to say the most, benevolence gone a little mad." And I would add, gone very mad.

Having well nigh exhausted the chief details of my subject, in so far as is expedient for the consideration of a general audience, it only remains for me to strongly commend this important and beneficent work to every resident in India, and particularly to those who possess the power and influence to establish and promote Societies for the Prevention of Cruelty to Animals.

Commencing with Lahore, which has often raised its voice against the practice of cruelty there, a central or parent Society might be formed under high patronage, possessing its own Secretary and officers, aided by the Government, the law, the public, the police, the principal of the Lahore Veterinary School, and possibly the "Anjuman-i-Punjab," constructed on lines improved from those of other societies, and having branches in all the cities, cantonments of the Punjab, and so on for all the presidencies, provinces, districts, and, if possible, native states of India. The first advance in this direction, however, to be advocated and accomplished, is the extension of the Act for the Prevention of Cruelty to Animals throughout the length and breadth of the land. After this, the formation and working of societies would become matters of local arrangement and detail with which I am not now concerned, but in which I should be glad to lend a helping hand if necessary.

NOTE.—Connected with the subject are a number of cruel practices and operations extensively carried on in India, some of which are indictable and punishable, and to which I could not refer before a distinguished audience, honoured by the presence of ladies. I have, however, written on one section of the subject before, an account of which, under the title of "Orchithlasis," will be found at p. 12, vol. i., VETERINARY JOURNAL, 1875, by "Hippochirurgus," my then *nom de plume*.

THE TEXAS FEVER.

DURING the spring and summer, for more than twenty years, there has been a large shipment of Cherokee and Spanish cattle to the Northern States of America. Some are used for beef at once, while others are turned out to pasture for the season. In this way our native stock are exposed to these wild and roving creatures; and in due time a malignant malady, peculiar in many respects, appears within our midst. Its invasion is often very sudden, but it rarely breaks out before the middle of August, and continues till cold weather.

Though this disease, of late years, has been of common occurrence in the Western, Middle, and even in the New England States, yet farmers had no experience with its ravages until the general traffic in Texas cattle had been established. Several efforts have been made to protect our Northern stock from exposure along the line of transit, but the increasing demand for fat and store cattle in the Eastern States has greatly interfered with any quarantine measures that might otherwise seem desirable. Accordingly, our native animals, and those from the Plains, have frequently come in contact, and thus free exposure has occurred, both at the feeding stations and on the cars. In this way an *annual* contagion has been disseminated throughout the land.

The period of incubation has not been accurately determined by experiment; but according to our observations in many well-marked cases from

ten to forty days may elapse from the time of exposure before an animal will show signs of being affected. In fact, there is a great difference in the susceptibility of our Northern cattle to this infection. Some may even escape it altogether, while others will fall victims to it at once.

The temperature and the time of the year have much to do with its early manifestations. The infection we have invariably found to be the most virulent during the warm, sultry weather, and in a cold, wet season it is usually very inactive. Hence, the time for the appearance of the first symptoms, after a given exposure, is very uncertain. During dog days most of the exposures are effective, the disease soon follows, and usually with fatal consequences; but later in the season, the invasion is less marked after exposure, and the mortality much reduced.

Nature of the Malady.

The native haunts of this disease are the tide waters of the Gulf. It never occurs spontaneously in a region visited by frost, and when carried beyond this thermal line in summer soon dies out on return of cold weather. In the Northern States it is not contagious from one native or acclimated animal to another, and consequently this malady can only be induced by exposure to Southern cattle that have not been wintered beyond the line of snow. This disease, therefore, must be regarded, in the light of comparative pathology, as a specific fever, uniform in its type, from year to year, and propagated by contagious effluvia. The alvine discharges are undoubtedly the principal source of infection, as can be shown by experiment. This usually occurs but once in an individual, and only in bovine animals, as the horse, sheep, and swine are never affected, however much they may have been exposed.

The manner in which this affection appears is quite variable, owing to the age and general condition of the animal. In cows, the diminution of milk is one of the first symptoms. The ears droop, the gait is sluggish and tottering, with a disinclination to move. The animal will stand in one position, with head depressed, when more or less trembling will be seen about the flanks. In a few days, the patient looks thin and hollow. The abdominal walls appear shrunken, and the back will be arched, as though suffering from distress or internal pains.

The skin is usually dry and hot, especially about the head, and rarely moistened on any part of the body with perspiration. The bowels are costive, but not unfrequently a fetid diarrhœa will supervene in the last stages. The urine is invariably scanty, high-coloured, and even bloody. In fatal cases, the bladder becomes distended, its wall paralyzed, and all power of micturition lost before death.

The diagnosis of this malady, therefore, is not difficult, especially with the aid of a thermometer, to determine the degree of fever heat. The elevation of temperature indicates the severity of an attack, and will be found to vary from 101 degrees, the normal standard in cattle, to 107, in fatal cases. The "ticks" are an important aid in doubtful cases. Their presence serves as a *label*, to tell us either from whence the animal came, or the exposure it has encountered. Consequently, when we find a sick creature that is covered with ticks, and shows a high fever heat on thermometer, we can be almost sure, even at an early stage, that it is a case of the Texas plague. But this will soon be corroborated by a high-coloured urine, which, on account of the congested condition of the kidneys, is a characteristic symptom; and, in fact, we have never seen an animal sick with this complaint that was not affected with Hæmaturia.

Post-Mortem Appearance.

The morbid aspect of the internal organs, after death, is so marked, that we are enabled to decide a doubtful case at once. The spleen, or milt, is always found much enlarged. It is often increased to five times its normal weight. This organ is so completely engorged with blood, that chemical changes set in before death. The tissues will, accordingly, appear soft, and not unfrequently the viscus is found ruptured. We have examined several cases where the spleen was more than two feet long, eight inches wide, and three in thickness, and weighed ten pounds. Such an organ cannot easily be overlooked.

The liver has a softened and waxy appearance. It is very yellow in colour, but with an occasional tinge of greenish black. This organ is usually much congested and enlarged, weighing from twenty to thirty pounds. The gall-bladder is surcharged with dark, viscid, and flocculent bile, the granular nature of which is brilliantly shown by transmitted light.

The kidneys, as before observed, are congested, swollen, and softened. They are often so much enlarged as to appear disturbed in form, as though they were twisted. On section, the tissues are dark, and unnatural in appearance. Hence the bloody urine, scanty though it be, that must escape from such an impaired organ, and which at once becomes of vital importance in the animal economy.

In ordinary cases, the heart and lungs show no signs of disease. But there is more or less inflammation and erosion about the stomach, especially in the fourth apartment, known as the *abomasum*. This, with the upper portion of the bowel, is congested and partially softened, the effects of which changes are often seen in healthy Texas cattle when slaughtered in Northern markets.

The blood also undergoes important changes. The red corpuscles are perceptibly modified in form and size, as well as wonderfully diminished in quantity, in the last stages. Hence the reason for the diffusion of the colouring matter all over the body before death. Bile can always be detected in the blood of one of these sick animals, and thus acts as a solvent on the anatomical elements. Cholæmia, therefore, exists, as shown in all the exudations beneath the skin, and in all the internal organs.

With the condition of the system as seen from a *post-mortem* examination, treatment can avail but little. Various plans of medication have been resorted to, but thus far with questionable results. No specific medicines have yet been found to stay its ravages. Eliminatives and antiseptics would naturally seem to be called for, and have been given in certain cases with good results. But it is impossible to select even an approximate remedy until the pathology of this contagious malady is better understood ; and this can only be accomplished by experimental investigation, which should ever be the theme of a National Sanitary Commission, appointed by the President. —*Chicago National Live Stock Journal.*

RINDERPEST IN RUSSIA AND THE CAMPAIGN IN EGYPT.

THE last issue of the VETERINARY JOURNAL contained some allusions to the dangers attending the importation of Russian cattle into Egypt for the use of the British troops there, as the history of Cattle Plague showed that in every war—from the earliest to the latest—in which supplies of oxen were obtained from Russia, the disease accompanied them and ravaged the countries into which they were imported, often extending far beyond these. This

fact cannot have been known to those who arranged for the importation of these cattle into Egypt, though it should have been ; and the ignorance manifested by the War Minister—though for this he cannot be held responsible—when he stated that Cyprus had not been visited by the disease, though it had received Russian oxen, shows that the War Office might advantageously consult veterinary authorities with regard to such apparently unimportant matters as the source of animal food for soldiers, as well as forage for horses. Cyprus, as was pointed out in the JOURNAL, was most severely visited by Cattle Plague in 1880, through the importation of Russian oxen from Odessa ; and now we learn that on the 23rd of last August the English Consul at that place telegraphed to Egypt that the disease was raging in and around Odessa. A large number of cattle had already been landed at Ismailia, and if Egypt escapes another calamitous invasion of the scourge—this time through our own remissness—it will be due to immense good luck, and the careful inspection by our Army veterinary surgeons of the Russian cattle, in order to detect the presence of infection among them. It must be remembered, however, that the malady sometimes affects the steppe cattle so slightly that it has sometimes escaped detection by skilled veterinarians. An outbreak of the disease in Egypt just now would be indeed a terrible finale to the disasters that country has already sustained. At any rate, it will be seen that the warning conveyed in the letter to *The Times* of August the 14th was not inopportune ; and we can only hope that our Army may not unwittingly have been the cause of introducing Cattle Plague into the country they have saved from impending ruin. With the whole basin of the Mediterranean to draw supplies of oxen from, it is indeed surprising that Russian cattle should have been preferred.

VETERINARY SCIENCE IN INDIA.

THE lamentable state of India with regard to veterinary matters, and especially with reference to the enormous losses sustained through the ravages of preventible diseases, has often been brought to notice in this Journal, and the urgent necessity for the institution of a veterinary sanitary organization insisted upon. But so far from any move in this direction being attempted, the condition of India is likely to be worse than ever, owing to the reduction of the Army Veterinary Staff in that country by twenty-four members. The very serious prospect which this diminution in the number of veterinary surgeons opens out, impelled the editor of this Journal to place himself in communication with a well-known Member of Parliament and patron of agriculture, with the view of bringing the subject before the legislature. The following correspondence will show how the question has been treated, and the result will, we think, be pronounced satisfactory so far. At any rate, it affords reasonable hope that the Indian authorities will not allow any more time to elapse before they have placed that great country under some kind of veterinary organization or system which will, at least, greatly decrease the ruinous losses caused by animal diseases.

From Mr. Fleming to ——— M.P.

February 14th, 1882.

DEAR ———,—Well knowing your great interest in the prosperity of our empire, and especially in an agricultural point of view, I have taken the liberty of drawing your attention to the state of affairs in India, with the object, if you think fit, of bringing the matter before the House of Commons.

India, as you are aware, is essentially an agricultural country, but it is

infested by the most serious and destructive animal diseases. Cattle Plague is never absent from some part of it, and causes fearful havoc ; Foot-and-Mouth Disease is always more or less prevalent, and attacks not only cattle and sheep, but also camels and elephants ; Sheep-Pox is often seen ; and Anthrax is indigenous, and destroys horses as well as cattle ; while Glanders is wide-spread. The losses caused by animal diseases are estimated at *six millions of pounds annually*, and this is probably under the mark.

To combat these scourges there is no machinery whatever. In the whole of that immense country—larger than Europe—there are at present only seventy-three veterinary surgeons, and these belong to the Army, and are all too few even for Army work. When a disastrous outbreak of disease occurs, some of these veterinary officers are detached from their regiments or corps to suppress it. But I need scarcely say that their exertions are seldom of much avail, owing to their being too few in number.

I received a letter yesterday from an Artillery veterinary surgeon who, alone, had been sent into the Punjab—a country nearly as large as Germany —to suppress Cattle Plague !

Though there are only seventy-three Army veterinary surgeons in the whole of India, it is now proposed to reduce this number to forty-nine.

There is a Minister of Agriculture, but no Veterinary Department ; and the enormous losses sustained by animal diseases are not attempted to be checked, but, on the contrary, will evidently be increased through the reduction of veterinary surgeons.

This is neither a professional nor a political question, but an imperial one. India is not thriving in our hands, and never can so long as such mismanagement prevails. It is not for the natives to stamp out these destructive pestilences ; indeed, they will not do so, as their nature is to be indolent, while their belief is "Kismet."

The attention of Parliament has never been drawn to the matter, and the Indian Government is a century behind the age. It would be in the highest degree patriotic to draw attention to the absence of a Veterinary Department in India, to the terrible losses caused by preventible diseases among animals, and their effect on the prosperity of that country ; to the altogether inadequate number of Army veterinary surgeons, even for Army service ; and to the proposal to reduce these to forty-nine for the three Presidencies.

If India belonged to France or Germany, these diseases would soon be extinguished by means of a properly organised sanitary (veterinary) force. All the diseases which do such damage are preventible, and only need a good staff, working under the Minister of Agriculture. This staff would pay its expenses a thousandfold and add greatly to the welfare of Hindostan. In every European country such a staff exists, and some countries—as Germany —could not keep any cattle or sheep without a more or less effective system of veterinary police.

Nothing could be more culpable or foolish than our management of India in this respect ; and I am in hopes that something would be done to remedy the discreditable state of affairs if it could be brought to the notice of the House of Commons. Those who have to do with India unfortunately do not understand such matters, and they allow them to remain as they have been from time immemorial.

The facts and figures pass, to some extent, through my hands, and they are startling and painful. They are certainly not creditable to us as an enlightened governing people.

I hope you may see your way to broach the subject, as I am certain you would, from your position in the agricultural world, be eagerly listened to.

Yours truly, ———

To ———, M.P.

Feb. 14th, 1882.

DEAR MR. FLEMING,—I have duly received your letter, and the matter it contains interests me much, and makes me feel desirous to endeavour to do some little good, by bringing the state of cattle diseases in India before the public, and so endeavouring to create an interest which may stir the authorities to some action. When I reflect, however, on, first of all, the great difficulty of getting any question before the House of Commons, and then, on a Private Members' night, getting any one to listen to it: and secondly, the great apathy displayed by the House of Commons on all matters, even the Budget, connected with India, I feel that any effort on my part to even ventilate the subject may, indeed will, prove abortive. The alternative then occurs to me, whether I could not do more good by showing your letter myself to Lord Hartington, and endeavouring to interest him in the matter. I know him personally, and could easily speak to and read him your letter.

It is from no wish to be lazy and shirk getting up the subject, for I know nothing of it at present, or where to find the statistics, etc., but should have to come to you for all this, that I propose this, but simply to place the suggestion before you, and I shall await your answer before taking any further step.

I will only add I fear you greatly over-rate my influence in being listened to in the House of Commons. Almost any subject there is hardly tolerated now, and India is, apparently, the last place of interest.

To ———, Esq. Yours truly, ———

From Mr. Fleming to ———, *M.P.*

Feb. 23rd, 1882.

DEAR ———,—I am greatly obliged to you for your letter respecting India. The question is of such serious moment to our empire, that I think no delay should take place in bringing it before those who are best able to deal with it. You know how I have agitated for measures and means to extinguish contagious diseases among cattle and other animals in this country. India is in a much worse plight than England has ever been, and matters threaten to be even more aggravated there, in consequence of the proposed reductions. As it is, the attempts to control contagious diseases are simply ridiculous, and only end in disaster.

I have a letter now before me from an Army veterinary surgeon in the Punjab, in which is the following statement :—"So far as any sanitary or preventive measures being adopted by the Civil authorities are concerned, it may be simply said 'these do nothing.' The amount of Cattle Plague that is about is something fearful. But in the whole of the Punjab, a country nearly as large as Germany, myself and two native assistants are supposed to be sufficient. And this is looked upon as the model province in India, and to be far ahead of all the others. Last year I was sent up into the Kangra Valley, the tea district in the hills, to investigate an outbreak of disease, which turned out to be Cattle Plague. The official returns for the year 1880 shows 7,000 deaths, but I really believe from what I saw, that three times that number would be nearer the mark. It is most heart-breaking work going on like this, and seeing the enormous losses and mortality that occur, while one is utterly powerless, single-handed, to stop them. I feel at times very disgusted with the whole country."

This is from one of the best and most energetic veterinary surgeons I ever met. It is only one of scores of instances brought to my notice.

No country can prosper when such a condition exists, and it was with a view to endeavour to have matters remedied that I took the liberty of writing to you.

I am sure Lord Hartington knows nothing of it, or he would soon act. You are at perfect liberty to read my letters to him, if you think fit, and if

his lordship would like to see me on the subject, I shall have great pleasure in waiting on him.

Yours, etc., ———

From Mr. Fleming to ———, *M.P., acknowledging receipt of a copy of a Minute from the India Office and Despatch from Lord Hartington, Secretary of State for India.*

May 5th, 1882.

DEAR ———,—I am very thankful to you for so kindly sending me the papers relative to Lord Hartington's decision in the matter of animal plagues in our Indian empire. You have done the country good service in this matter, and I have to thank you personally for laying it so well before his lordship.

The minute, of course, tries to palliate the mischief; but my information is more likely to be reliable than that of the Revenue Department, as it is derived from the Army veterinary surgeons who have been detached from their regiments to suppress the calamitous outbreaks of disease.

The Indian Government should adopt the system of suppression and prevention I have laid down in my work on "Veterinary Sanitary Science and Police." Without men, system, and method, things will never mend.

Yours, etc., ———.

India Office Minute on Mr. Fleming's Letters.

———, M.P., sends for Lord Hartington's information and consideration two letters from Mr. Fleming, of the Veterinary Department, War Office, which his lordship has directed to be made official.

In these letters, Mr. Fleming, a high authority on the epidemic diseases of cattle, brings to notice the great prevalence of those diseases—Rinderpest, Pleuro-pneumonia, Foot-and-Mouth Disease, Anthrax, Glanders, Sheep-pox, and others—in India; points out the loss, estimated at £6,000,000 annually, which they cause, and what a heavy drain this is on a poor agricultural country; shows how utterly inadequate the existing strength of European veterinary officers in India is to cope with such a state of things; protests warmly against the reduction of that strength, now under contemplation, from seventy-three to forty-nine officers; criticises severely the alleged neglect of the Indian Governments to do anything whatever for the prevention of cattle disease; and, finally, begs earnestly for immediate and vigorous action in the matter.

I. It may be well to dispose first of the question of the reduction of strength of the Veterinary Department. On the subject I have consulted the Military Secretary.

It must be remembered that the general question now raised by Mr. Fleming is a purely *civil* one, whereas the reduction of the Veterinary Department referred to is entirely a matter of *military* organization, and cannot be influenced by any civil considerations. The Veterinary Department is solely a military one, and its officers are entertained only for military purposes, although their services have sometimes been freely lent (often to the great inconvenience of the officers themselves) to the Civil Departments on special occasions for duties like suppression of cattle epidemics. The Government of India, upon the report of their military expenditure commission, have, I understand, proposed for the approval of the Secretaries of State for India and for War, a reduction of the Veterinary Department to the strength they consider necessary for purely military purposes. The question of the need of a greater number of veterinary officers for civil administration must then be considered entirely apart from that of the strength needed for military requirements.

I may add, however, that the remnant of the old Indian Veterinary Department, now reduced to six members, and in process of extinction, is at present chiefly employed upon *civil* duties, mostly the improvement of the breed of horses in India.

To proceed to the general subject of Mr. Fleming's letters.

I should premise that I write much of what follows from memory, as the correspondence on the subject of cattle disease is scattered over a great number of years, and contained in administration reports, revenue and health reports, etc., of different provinces, and seems never to have been brought together in this office. I happen, however, to have some personal acquaintance with the subject, having served in several districts which have suffered much from cattle disease, and having had to take measures for the suppression of a bad outbreak of Rinderpest in the Island of Bombay, when I was Municipal Commissioner there.

II. I think that the account which Mr. Fleming gives of the ravages of cattle disease in India is not at all exaggerated. I do not know whence he has obtained his estimate (£6,000,000) of the annual loss, but I can quite believe that it is not too high. A diminution—sometimes a very serious one—in the numbers of cattle has attracted attention in many parts of India; and inquiry has usually shown that (putting out of the question periodical droughts and famine) its principal cause has been epidemic disease. The diseases are not apparently new ones; the inquiries of the Commission of 1870 went to show that at least most of them have been known from time immemorial; but it is the general belief of the natives in the provinces with which I am acquainted that they have become more destructive during the last quarter of a century.

III. But I think that Mr. Fleming much underates the difficulties of dealing with cattle diseases, especially epidemics, in India, when he says:—

"If India belonged to France or Germany, these diseases would soon be extinct, by means of a properly organised sanitary (veterinary) force. All the diseases which do such damage are preventible, and only need a good staff working under the Minister for Agriculture."

Putting out of the question the general difficulties, which we experience every day in, for instance, the promotion of sanitation as regards human beings, in carrying out measures which affect the daily life of a population so vast, so unenlightened, so wedded to old customs, and so suspicious of new ideas, as that of India, there are special difficulties in dealing with cattle diseases, some of which I will briefly notice.

I believe that by far the most effectual—perhaps the only effectual—measures as yet discovered in Europe for checking cattle epidemics are, destruction of infected animals and segregation or isolation of compromised herds or localities.

The first of these measures is out of the question in India, and this was the opinion of the Commission of 1870. There can hardly be a more infallible recipe to cause a rebellion in India, than to kill Hindus' cows against their will.

Isolation, though less objectionable, is scarcely more practicable. In the first place, cattle in Great Britain are bred for milk and meat only, and their isolation in any locality does not therefore involve any general inconvenience. In India cattle form the working power for all traffic and all agricultural operations, which would be entirely put a stop to in any locality by any general measure of segregation. The difficulty of carrying out effectively actual segregation is also very great. In India, farmsteads are not scattered about all over the country, each isolated in the midst of its own fields; the agricultural population live all together in closely-packed towns, in the middle of the lands of the Commune. All the village cattle--a survival

from the days when the fields were made unsafe at night by robbers and wild beasts—are kept at night, often in common, packed together within the village; they are driven out together, often by common herdsmen, to the fields in the morning; they are watered in common at the village tank; they graze all day in the common pasturage, or, if in the arable fields, these are totally unfenced; and they are driven back together to the village at night-fall, "cow-dust time," as the Mahrattas expressively call it.

Moreover, from want of water, pasture, and fodder, the cattle in many parts of India are obliged to be driven away in the hot weather to graze in the common hills and woodlands, where they must be kept in common in charge of the village herdsmen, and segregation is impossible.

The above will give some idea of the immense difficulty of enforcing authoritatively effective isolation, until, at least, the people become sufficiently enlightened to change their whole way of living in order to make it possible.

I should notice, too, that a great deal of the mortality of Indian cattle is caused, not by epidemic, but by climatic disease, especially at the beginning of the rainy season. During the hot weather, the cattle are fed on dry food, the more valuable animals on the straw of millet, the poorer ones on what withered grass, leaves, and roots, they can pick up upon the parched commons and hill-sides, and the latter, at least, get much reduced in condition. Then the rain comes down in torrents, the young rank grass springs up as if by magic, the cattle eat voraciously, and numbers die of "Hoven," or of Bowel Complaint. No sanitary precautions can affect this kind of mortality, though it might doubtless be much reduced by a general knowledge among the agricultural classes of the appropriate treatment. The Commission of 1870 found, for instance, that the cure for "Hoven," puncturing the rumen, is generally unknown.

IV. Mr. Fleming is mistaken in supposing that the Government of India have done nothing with the object of checking Indian cattle plagues.

The subject has received much attention from time to time, especially in Southern India, where, in 1848, Dr. Gilchrist, and in 1864-8, Veterinary-Surgeon Thacker made valuable enquiries and reports, one result of which was the passing of (Madras) Act II., of 1866, for the prevention of the spread of cattle disease. In the years preceding 1869, very bad outbreaks of disease in Upper India led to the appointment in that year of a Commission to investigate the whole subject, at the head of which was Mr. Haller, one of the ablest and most experienced veterinary surgeons in India. They carried on their enquiries, which extended to every province in India, throughout 1870, and in June, 1871, submitted a report which, with its appendices, runs to over 1,000 folio pages, and gives a most complete and exhaustive account of the history, location, causes, nature, and symptoms of Indian cattle diseases. This report was sent home, and was communicated to the Army Sanitary Commission, and their remarks, urging the improvement of the hygiene of Indian cattle rather than the stamping out of epidemics, on the principle "prevention is better than cure," were transmitted to the Government of India by Despatch (Sanitary), No. 27, of 1872.

I have not been able to trace the orders issued by the Government of India on the report of the Commission. But I may state that nearly everything that has been done in the matter since 1871 has been based more or less directly on their recommendations.

Those recommendations were, however, what I fear Mr. Fleming would consider very inadequate, as the Commission were much impressed with the difficulties of the subject. They were chiefly the ascertaining periodically the existing numbers and value of live stock, in order to know if stock is increasing or diminishing; early information as to outbreaks of cattle

disease ; prompt measures for its suppression on information of an outbreak being received ; segregation, as far as possible, of diseased animals ; diffusion of knowledge as to the causes of and remedies for disease ; the education of a skilled Native Veterinary Agency ; and legislation to enable such rules to be enforced as experience might prove practicable and useful.

Inoculation as a prophylactic against epidemic disease and *destruction of diseased animals*, were considered altogether out of the question.

The following are some of the chief measures that have been carried out since 1871 :—

(1) In most parts of India arrangements have been made for an annual or periodical census of stock. Lately there has been a good deal of correspondence on the subject of making this census as complete and accurate as possible.

(2) Information regarding the state of cattle disease is now regularly obtained, and is embodied in the weekly or fortnightly crop and weather reports of each district.

(3) When a bad outbreak occurs something is done to help the people, in the way of giving such veterinary aid as is procurable ; distributing advice and medicines ; insisting on the burial of carcases, etc., etc.

(4) In Bengal and Madras, and, I think, in other provinces, easy handbooks or primers on cattle diseases, their causes, prevention, and cure, have been prepared and widely circulated among the agricultural classes.

(5) Some progress has been made towards training a Native Veterinary Agency. In Madras, the pupils of the Agricultural College are taught veterinary science, with a special view to the treatment and prevention of cattle disease. These pupils come from and return to, all parts of western and southern India. In Burmah, a veterinary class described as "one of the most thriving institutions in the province," has been for some time established under professional instruction ; it is said that some of its pupils have already done good service in several places ; and it is expected that the knowledge of the proper treatment of cattle disease will thus be spread among the people. In the Punjab, a veterinary college has been established primarily for military purposes, but also for general instruction. Something of the sort has, I believe, been done in other provinces also, though I do not remember the particulars.

(6) As regards legislation, besides the Madras Act (II. of 1866), above referred to, a general Act (XX. of 1879) has been passed for the prevention of Glanders and Farcy amongst horses.

V. It is not, therefore, accurate to say that nothing has been done in India for the prevention of cattle disease. But I am far from affirming that what has been done is at all adequate to cope with the evil which has, I fear, diminished little since 1871, and Mr. Fleming's letters are particularly well-timed, now that the Agricultural Department, recommended by the Famine Commission, is in process of organization throughout India. He deserves, I submit, the thanks of the Secretary of State for drawing his attention to the subject, and although the question has doubtless not escaped the observation of Mr. Buck and other officers connected with the New Department, it will not be amiss to bring it specially to the notice of the Indian Government.

It is proposed, therefore, to send to India the following Despatch, drawing attention to the subject, directing that it shall be taken up by the New Agricultural Department, and asking what has been done, or what it is now proposed to do, upon the recommendations of the Commission of 1870.

And I think it may also be well to ask the Government to consider

whether those recommendations ought now to be accepted as in all respects authoritative. I believe that considerable progress has been made since 1870 in knowledge of the subject, and I am doubtful whether the best opinions would now concur in all the conclusions of the Commission. Two points particularly occur to me.

The Commission, as I have said, altogether rejected—for reasons which then appeared conclusive—inoculation as a prophylactic against Rinderpest and similar epidemic diseases. But recent researches of M. Pasteur seem to show that it may be possible to induce the disease in a modified and mild form with perfect safety, and with absolute security against subsequent infection. This discovery may prove invaluable in India, where, as I have shown, the ordinary measures for the prevention of epidemics are inapplicable.

Again, the Commission laid great stress on the *burial* of carcases of diseased animals, and this measure has, I believe, been enforced with much care since their report. But Mr. Darwin has lately proved that nothing is more likely to produce a fresh outbreak of the disease than cattle grazing upon places where diseased cattle have been buried.

In this paper I have said nothing about *Cattle Poisoning*, a subject which has rather a close connection with that of cattle diseases.

Despatch from Lord Hartington to the Governor-General of India.

India Office, London, 20*th April*, 1882.

To His Excellency The Most Honourable The Governor-General of India in Council.

My Lord Marquis,—Para. 1. Mr. Fleming, of the Veterinary Department, War Office, who is a high authority on the epidemic diseases of cattle, has brought to my notice the great prevalence of those diseases in India and the immense loss which they cause.

2. It appears to me that the present time is fitting to call the attention of your Excellency's Government to the subject, than which none deserves the earlier or more careful consideration of the Agricultural Department now being organised, in accordance with the recommendations of the Famine Commission, in several provinces as well as in your own secretariat.

3. I find that the question has received much attention from time to time, especially in the Madras Presidency, and that bad outbreaks of disease in Upper India in the years preceding 1869 led to the appointment of a Commission in that year to investigate the whole subject. Their very complete and exhaustive report, dated 30th June, 1871, was transmitted to this Office, and was, by the orders of my predecessor, communicated to the Army Sanitary Commission, whose remarks upon it were forwarded to the Government of India with Despatch (Sanitary) No. 27 of 1872.* Since then the Secretary of State does not appear to have been specially informed what steps have been taken to give effect to the recommendations of the Commission, although the frequent references to the subject of cattle disease in provincial administrative reports and other correspondence indicate that they have not been entirely lost sight of.

4. The principal recommendations of the Commission were as follow :—

(1) That the existing numbers and value of live stock should be periodically ascertained, with the view of detecting any extraordinary disease.

This recommendation appears to have been to a great extent carried out. In those provinces in which the necessary machinery exists, an annual or

* Dated 6th November, 1872.

periodical census of stock is taken. In a recent despatch* I have impressed upon the Government of Bombay the necessity of making these returns as accurate as possible, and I doubt not that this point will not escape the attention of the local Governments when dealing with the proposals of the Famine Commission† for the improvement of agricultural statistics.

(2) That early information should be furnished to the authorities of any outbreak of cattle disease.

Effect appears to have been given to this suggestion also. I observe that the weekly or fortnightly crop and weather reports of each district contain the information.

(3) That prompt measures should be taken for the suppression of any outbreak reported.

I have no information as to the orders in force upon this point, though various references from time to time in the proceedings of the different local Governments appear to indicate that it is not altogether overlooked.

(4) That diseased animals should, as far as possible, be isolated.

On this point also I have no information.

(5) That a knowledge of the causes of epidemic diseases and their remedies should be diffused among the agricultural classes.

It appears that some attempts had been made in Madras and in Bengal, probably also in other provinces, to give effect to the recommendation by the preparation and circulation of simple handbooks on cattle diseases.

(6) That a skilled native veterinary agency should be trained and posted to suitable localities.

Some efforts have been made—in Madras, in connection with the Agricultural College ; in Burmah, by the institution of a veterinary class ; in the Punjab, by general instruction given in the Military Veterinary College ; and perhaps in some other provinces—to give effect to this recommendation.

(7) That legislation should be undertaken with the view of enabling the local authorities to enforce such rules for the suppression of cattle disease as experience may prove to be practicable and useful.

With the exception of the Madras Act (II. of 1866) for the prevention of the spread of cattle disease (which was enacted before the date of the Commission's enquiries), and of the Glanders and Farcy Act (XX. of 1879), it does not appear that any legislation on the subject has been attempted.

5. I now request that your Excellency's Government will take the important questions of the prevalence of epidemic cattle disease, and of the possibility of diminishing it, into your early and careful consideration. And I desire to be informed, after such investigation and reference to the local Governments as may be requisite, what steps have as yet been taken, and what steps it is proposed to take, to give effect to the recommendations of the Commission of 1869.

6. With regard to the last proposal of the Commission, that for special legislation, it would appear desirable to ascertain to what extent the provisions of the Madras Act (II. of 1866) have been carried out in that Presidency, and what results they appear to have had in effecting its object, your Excellency will probably also think it desirable to consider whether all the conclusions of the Commission are in accordance with the present views of the highest authorities, as it is possible that some of them may require modification to bring them into harmony with the latest knowledge on the subject of cattle diseases. The Commission, for instance, laid great

* No. 46, Revenue, of 22nd December, 1881.
† Pages 40, 41, of Part I. of Famine Report.

stresson the importance of burial of carcases of diseased animals, but it has recently been ascertained that a fresh outbreak of Rinderpest is very likely to arise among cattle grazing where carcases of animals which died of that disease have been interred. Again, the Commission were entirely opposed to inoculation as a prophylactic against epidemic diseases, but the recent researches of M. Pasteur tend to show that it may be possible to induce the disease in a modified and mild form with perfect safety and complete security against subsequent infection. This discovery may prove invaluable in India, where the measures commonly used in Europe for the prevention or suppression of cattle epidemics, the destruction of infected animals, and the isolation of compromised herds or localities, are probably inadmissible or impracticable.

7. My attention has been called to the proceedings of the Government of the Punjab, of November, 1881, on the subject of the prevalence of cattle disease in parts of that province. These interesting papers, while they show that the subject has not escaped the attention of the local Governments, illustrate also its importance, and the difficulties involved in it. I would call your particular attention to the letter of Veterinary Surgeon Queripel, dated 12th August, 1881, and printed at p. 735 of the proceedings.

I have the honour to be,
My Lord Marquis,
Your Lordship's most obedient humble servant,
(Signed) HARTINGTON.

Proceedings of Veterinary Medical Societies, &c.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

A QUARTERLY meeting of this Society was held in the London Hotel, St. Andrew's Square, Edinburgh, on Wednesday, August 16th, the President of the Society, C. Cunningham, Esq., M.R.C.V.S., Slateford, in the chair. There were present Professors Williams, Walley, and Baird ; C. Philips, Esq., V.S., 3rd Dragoon Guards ; Messrs. Connachie, senr., Fairbairn, Fingzies, W. O. Williams, Hutton, Storrie, Young, Dalling, Cameron, Kirk, Manuel ; some visitors, the representatives of the press, and the Secretary.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members of the Society :—Henry Thompson, Esq., M.R.C.V.S., Aspatria ; C. Hutton, Esq., M.R.C.V.S., Kelso ; T. Connachie, Esq., M.R.C.V.S., Selkirk.

The Secretary (Mr. R. Rutherford) was appointed delegate to the Committee engaged in drawing up the Rules for the proposed British National Veterinary Association, and was empowered to appoint a substitute when unable himself to attend.

The SECRETARY intimated that the Scottish Central Society had agreed to join in the proposed annual meeting of the three Scottish Veterinary Medical Societies, and took occasion to say, that he hoped the movement would not fall through for lack of hearty support and attendance, as it was one which, by bringing members from all parts of Scotland together, was calculated in many ways to do a deal of good.

It was agreed that the first meeting should be held in Glasgow, the West of Scotland Society making the necessary arrangements.

Mr. CONNACHIE read the following notes of an outbreak of Pleuro-pneumonia.

Mr. President and Gentlemen,—Our indefatigable and worthy Secretary has asked me to relate the circumstances regarding an outbreak of contagious Pleuro-pneumonia which lately occurred in my practice, and knowing the great interest that he takes in all that relates to this disease, I consented to do so.

On the 15th of February last, when at Carterhaugh, the Home Farm on the estate of Bowhill, belonging to His Grace the Duke of Buccleuch, I was asked to look at a cow which was said to have suddenly gone off her milk that day. On examination I found her presenting the following symptoms. Dull appearance; dry, staring coat; short, quick breathing, with a hard, ringing cough. Pulse 75°, temperature 102°; bowels constipated. On auscultation, I found a loud rasping sound pervading both lungs, whilst she evinced no pain when percussion was applied. I pronounced the case to be acute Bronchitis.

On inquiry I was informed that the cow had been purchased, three days previously, at St. Boswell's Auction Mart, that she had calved that day, which was a very cold one, and that she was driven home a distance of fourteen miles. I concluded that she had caught cold, hence the Bronchitis. I administered a pint and a half of linseed oil, along with half an ordinary dose of Colic mixture, and applied a strong stimulating liniment to her chest. Next day I forwarded two doses of cough mixture, composed of Belladonna Solution, Ether, and Potassa Nitras. When back at Carterhaugh two days afterwards, I was informed that the cow was nearly all right, that she was eating well, and giving plenty of milk. On looking at her I observed that although she was very much better, her breathing was still considerably quickened, her coat still staring, with an occasional hard cough. I informed Mr. Reekie, the factor, that I was afraid that the cow had the seeds of Tuberculosis in her system, and advised him not to put her to the bull again. He resolved to take my advice. She continued to do well, so I did not require to see her again.

About the middle of March I was requested to go to Carterhaugh, to examine two cows, which I did, and found them presenting very similar symptoms to the former one. I inquired of the cowkeeper if there had been any change in their treatment, and he replied that there had been none, but that the night previously the byre door had been inadvertently left open, and the night being very stormy he found all the cows standing shivering from cold; but with the exception of these two all the others were all right again. As I began to suspect that I had something more than ordinary Bronchitis to do with, I took the precaution to have them isolated and put them through the same treatment that the first cow received. I also informed Mr. Reekie that if they did not appear better on my next visit, I would have one of them slaughtered to determine the true nature of the affection. This Mr. Reekie assented to. On my visiting them on the second day after, I was surprised to find both cows standing, chewing the cud, and looking as if little or nothing had been the matter with them, and I was informed that they were eating well and giving their milk freely. They were kept by themselves for a few days longer, when, appearing perfectly well, they were sent back to the byre beside the others. Although I was frequently at Carterhaugh I never required to look at the cows, till the 22nd of May, I was again called to examine two cows. After seeing them I was soon convinced that I had now to deal with true contagious Pleuro-pneumonia. Whereas none of the former animals presented any of the pathognomonic symptoms of Pleuro-pneumonia, they were fully developed in the cases before me, viz., back arched, knuckling over at the hind fetlocks, elbows turned out, breathing not so much quickened, but a peculiar quivering at the flanks, with a low muffled cough; signs of pain when pressed on the intercostal spaces; aus-

cultation revealing complete hepatization of the right lung ; temperature 105° and 107° respectively ; in fact, they presented a set of symptoms that when once seen are not easily forgotten. I at once arranged to have them slaughtered, which was done, and along with my son made a *post-mortem* examination on both carcases, and it was matter for surprise to both of us that such extensive lesions should have become developed in the short period that the animals had shown symptoms of being affected. The right lung of both of them had become completely consolidated and adherent to the costal pleura by false membrane, with great amount of exudate.

As the *post-mortem* had clearly revealed the true nature of the disease, and as there were other five cows which had shown no signs of being affected, I resolved to secure some pure lymph and try the effect of inoculation. Before doing so I took the temperature of each animal. To all outward appearance they were perfectly healthy, although the thermometer in the case of one of them indicated 102°. Four of the inoculated cases did well, became slightly fevered about the fifth day, with a considerable amount of swelling at the part of the tail where operated upon, with a slight formation of matter.

In the case of the fifth cow and the one whose temperature was 102°, she never exhibited any systemic disturbance, nor did the tail take on any of the inflammatory action that the others did, and on the 16th of June she began to show symptoms of Pleuro. With a temperature of 106°, she was at once slaughtered. The remaining four have continued to do well, and are now fit for the butcher ; the period of quarantine, fifty-six days, expires to-day, and I expect to have an opportunity of seeing them slaughtered, and will note the results.

I had been congratulating myself that I had now seen the end of the outbreak, when, on the 20th July, I was requested to go to Newark, about a mile and a half from Carterhaugh, but on the same estate, to examine the cow belonging to the shepherd there. After making an examination, I at once declared the disease to be Pleuro-pneumonia, and asked the owner if the cow had ever been near Carterhaugh ; he said no ; but he added that one of the Carterhaugh cows had been at Newark from the beginning to the 18th of April for the purpose of supplying milk during the lambing season. He said that the Carterhaugh cow was perfectly healthy the time that she was at Newark, and that he never heard her give the slightest cough. His own cow continued healthy till the 19th of July, when she seemed dull and unwilling to move. I was sent for, as I said before, on the 20th, and found her presenting the well-marked symptoms of Pleuro-pneumonia. I had her slaughtered, and the *post-mortem* revealed very extensive lesions, similar to those found in the Carterhaugh cows, the right lung in this case also being affected, a portion of which I here show you, preserved in spirit.

Although most of the older members of this association may have observed many similar outbreaks, I think that the above is not without interest, as it serves to prove how very insidiously the disease may be introduced among a herd ; because I have come to the conclusion that the cow purchased at St. Boswell's in February, and brought to Carterhaugh, must have had a very mild attack of Pleuro when she first came there, although it is contrary to all my previous experience, that three animals should become affected with Pleuro-pneumonia and recover in such short time, without almost any treatment, or at least with that of the very simplest kind.

The Newark cow becoming affected also goes to prove that a healthy animal, which has been in contact with diseased animals, may carry and communicate the disease to other animals.

With regard to the efficacy of the protection from, and suppression of outbreaks of Pleuro-pneumonia by inoculation, I have had only two opportunities of testing it, in both cases with very satisfactory results, and I hope

that Mr. Rutherford, our Secretary, notwithstanding the adverse criticism which he has received from those high in authority, will not rest until he obtains for it a place on the pages of the Contagious Diseases (Animals) Act of 1878.

Professor WALLEY related the history of a somewhat more serious outbreak of the same disease, which had lately occurred in Edinburgh, and which supported the theory of the disease spreading by indirect contagion.

[This outbreak was speedily put an end to by inoculation of the whole of the animals in the infected byres.]

The CHAIRMAN and several members commented on the very insidious manner in which the contagium may be conveyed and spread, referring specially to a cow which had that very day been exposed for sale in a full market, and which, on being slaughtered, was found to be badly affected with Pleuro-pneumonia.

The SECRETARY strongly supported the theory of the disease spreading by indirect contagion, knew many instances of it, and further expressed his belief that a great many cattle passed through the disease without being suspected, and in apparent health to an ordinary observer, were, nevertheless, capable of communicating the disease, as they frequently do to others.

Mr. CAMERON, Berwick-on-Tweed, read a paper giving a review of the Contagious Diseases (Animals) Act, and the provisions of clauses 15, 16, and 17 of the Animals Order, 1879. He passed some strictures thereon, condemning as inefficient the present system of disinfection, expressing a preference for the manner of doing so under the orders of a prior date. He referred to the "Swine Fever Order" as illustrating the continued neglect of disinfection; while the regulations affecting horse-boxes were inefficient, and even dangerous to human life. He suggested several alterations in the direction of more stringency in regard to cleansing and disinfecting, and thought the matter should be brought before the veterinary department of the Privy Council.

After some remarks from Professors Williams and Baird, the former of whom animadverted on the fact of many persons, not veterinary surgeons, filling positions on the working staff under the Act, who were quite unfit to do so, Mr. Cameron was requested to extend his paper, and bring it forward at some meeting more largely representative of the profession.

The CHAIRMAN, Principal WALLEY, the SECRETARY, and others gave descriptions of cases of interest, viz., case of Split Molar Teeth occurring one on either side of the jaw at one and the same time, the feature of interest being the occurrence of fracture in teeth on opposite sides at once, and which Mr. Cunningham has several times found to be the case. Cured by extraction. Case of large bird swallowing a pin: the treatment recommended by Professor Walley being diet of solid food, so as to get the pin surrounded until ejected. The case terminated as desired, the pin being passed surrounded by solid excreta. Case of severe paroxysmal roaring, death being imminent from spasmodic closure of the larynx: treatment, tracheotomy, which was performed when the horse had fallen and was apparently dying; recovery followed. This same horse was afterwards the subject of well-marked Equine Variola, the eruption extending more or less over the trunk, heels, and coronets (confluent), eyelids, lips, tongue, and just inside the nostrils. It ran its course favourably in about ten days; the treatment being good, soft food for a few days, Hypo-sulphite of Soda in water, an airy and strictly-cleaned loose-box, and sponging the body over with slightly carbolized tepid water. Although not completely isolated, no other cases occurred in a stable of forty horses.

The meeting separated with votes of thanks to Messrs. Connachie and Cameron, and to the Chairman for presiding.

R. RUTHERFORD, *Hon. Sec.*

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE seventy-second quarterly meeting of this Association was held at the Medical Institute, Hope Street, on Friday evening, August 11th, 1882, the President (William Leather, Esq.) in the chair. There were present—Messrs. Elam, Morgan, A. Leather, Kitchin, Bain, Donald, and W. Welsby, Liverpool; Greaves, Faulkner, A. Lawson, Wolstenholme, Hopkin and Crawford, Manchester; R. C. Edwards, Chester; W. Woods, junior, Wigan; J. Wilson, Nantwich; J. K. Pilkington, Woolton; and the Secretary. Letters, regretting their inability to attend, were received from Professors Williams and Walley, Messrs. W. Lewis, A. H. Darwell, M. J. Roberts, T. Taylor, S. Locke, and P. Taylor.

The minutes of the previous meeting were read and confirmed.

Mr. FAULKNER proposed Mr. Joseph Donald, Liverpool, as a member of this Association, seconded by Mr. Edwards, and carried.

Mr. PILKINGTON nominated Mr. Wilson, Nantwich; and Mr. ELAM nominated Mr. W. Welsby, Liverpool, as members of this Association.

The PRESIDENT drew attention to the circular issued by the "Fleming Testimonial Fund" Committee, in which the Presidents and Secretaries of Associations are requested to act as centres for their district, and intimated that the Secretary would be glad to receive subscriptions.

The SECRETARY read a letter from Mr. Banham, requesting the Association to elect another member to represent them on the Committee of the British National Veterinary Association.

Mr. ELAM proposed that the Secretary join the President in representing the Association on the Committee of the B.N.V.A., seconded by Mr. GREAVES, and carried unanimously.

The SECRETARY then read a letter to the President from Mr. MOTUM, Secretary Liverpool Branch of the R.S.P.C.A., in reference to Mr. Greaves' paper on "Cruelty to Animals and the Veterinary Surgeon's Duty," read at the last meeting. The President, Messrs. Elam, Greaves, Faulkner, A. Lawson, Pilkington, Wilson, and the Secretary took part in the discussion which followed.

Mr. GREAVES proposed that the best thanks of the Association be accorded to Mr. MOTUM for his able and interesting letter on Cruelty to Animals; this was seconded by Mr. ELAM, and carried unanimously. The usual vote of thanks to the President terminated the meeting.

J. W. P. MOORE, *Hon. Sec.*

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting was held in the Lecture-room of the Veterinary College, Buccleuch Street, Glasgow, on 23rd August, 1882, at 3 p.m.

Present:—The President (Mr. Pottie) in the chair, Professor Walley, Edinburgh; Professors McCall and McQueen, Glasgow; Mr. Robinson, senior, Greenock; Macfarlane, Greenock; Douglas, Dunoon; Wyper, Partick; Taylor, Cathkin; Weir, Airdrie; McBride, Dickie, Mitchell, Weir, Anderson, junior, and the Secretary, Glasgow.

The PRESIDENT then called on Professor Walley, the essayist for the evening.

Aspirator and Concealed Bistoury, Saws, etc.

The Professor (before reading his paper) directed the attention of the members to the fact that some time ago he submitted for their inspection a

large ecraseur made on the screw principle, which could also be used for the purpose of concealing bistouries, saws, etc., for operations on such organs as the rectum, uterus, mouth, larynx, or nostrils. Finding that the screw acted unsatisfactorily as an ecraseur, he had, with the assistance of Mr. Tennant, instrument maker, of Edinburgh, devised the instrument now submitted for their examination.

The instrument was a greatly enlarged Chassaignac ecraseur, fitted with a small and large chain, the cutting edge of which was serrated, and a twisted wire, and so arranged as to be easily fitted with bistouries, saws, or other instruments as desired.

Compound Speculum Dilator, Retractor, and Concealed Bistoury.

Professor WALLEY in introducing this instrument to the notice of the members, observed that all must occasionally have felt, when performing such operations as neurotomy and tracheotomy, the necessity of a convenient retractor. He thought the instrument before them supplied that want. As it was only a model, it was perhaps too small for some purposes, such as a speculum or bistoury, but it could be made much larger and stronger, and at the same time be utilized for the more delicate operations ; it was also fitted with a rack so as to regulate the movements and keep it in a definite position when required.

The purposes for which it could be utilized were (1) as a retractor in operations upon the eyelids, etc., being fitted with sharp and blunt hooks and forceps, with this object ; (2) as a dilator of the nostrils, vulva, or anus ; (3) as a speculum ; (4) as a concealed bistoury.

He then read the following essay :—

Mr. President and Gentlemen,—The subject-matter of my discourse to-day is not one—it may be thought—quite suited to an audience mainly composed of citizen veterinary surgeons. I have chosen the subject of "Diseases of Sheep" for three reasons : (1) because I thought it would be a little variation from your ordinary routine ; (2) because I am desirous of rousing the attention of my brother practitioners to the diseases of animals which claim equally as much their care and assistance as do the larger and on the whole more valuable animals with which they are more accustomed to deal ; and (3) because in various ways the subject has attracted more attention of late amongst sheep-breeders than it did formerly. Farmers, curiously enough, have in regard to the diseases of sheep assumed in the past very much the position of *fatalists*—the death of a sheep has been received with only a limited amount of interest, and indeed with some degree of callousness, as it was thought that nothing could be done for such animals. Since I have occupied the chair of Cattle Pathology in the Edinburgh Veterinary College (a period of some twelve years), I have annually impressed upon the minds of the members of my class the necessity—when located in rural districts—of studying the diseases not only of sheep, but of other and less important domestic animals, such as pigs and poultry, and I am happy to say that in many instances the advice given has been accepted with the result that these young practitioners have not only thereby improved their own position in the localities in which their lot has been cast, but have been enabled to arrest many outbreaks of ovine and other diseases, and have thus materially benefited those who have employed them.

The result of the supineness to which I have alluded is strikingly brought out in the confusion which exists as to the nomenclature of ovine diseases, half a dozen different diseases being designated by one and the same synonym, thus—"*Inflammation*," "*Sickness*," "*Thorter or Thwarter-ill*," "*Joint and Louping-ill*," "*Milk Fever*," and "*Braxy*," from the vocabulary of those

who pretend to any knowledge of the disorders of sheep in this country. It is worthy of remark that, with the exception of one or two, none of the terms employed convey to the mind any idea of the pathology of the disorders to which they are applied.

As I have before stated, the consideration of the diseases of sheep has lately from various causes received a marked impulse, and, as a consequence, the thoughts of men have been directed into the groove of the fashionable germ-theory, and facts otherwise of easy explanation have been twisted and manipulated in such a manner as to support the theories which have been promulgated.

It may be as well that I should say at the outset that so far as I can at present see, there is only one ovine malady of any consequence that requires the intervention of the germ-theory to elucidate its nature and origin—that disease is Anthrax Fever, or what is very often called Red Braxy. With this exception, the causation of all the more common diseases is the same, viz., *mismanagement* and *faulty dieting*, resulting in an altered, deteriorated, or depraved condition of the blood, thereby rendering animals more susceptible to the influence of adverse circumstances, and more prone to contract diseases from which they would otherwise have enjoyed perfect immunity.

I have said that ovine diseases are most largely due to two sets of causes. I should have added to those a third, viz., the lowering influence of the ravages of parasites, to which especially Water Braxy—Dropsy—can often be traced; and while I have not found intestinal or bronchial entozoa to exist in such large numbers in sheep in Scotland as in England, it has not unfrequently happened that when called upon to investigate an outbreak of disease of an anæmic and dropsical character, I have been able satisfactorily to trace its production to the effects of either intestinal or bronchial parasites, or both, and to advise the adoption of methods of treatment which have been highly successful in arresting the progress of the malady.

I need not, I think, point out to you in detail the various influences which modify the conditions of the blood of animals, except in so far as is necessary to the proper consideration of the subject with which I have undertaken to deal. Before doing this, however, I may remark that there are several circumstances peculiar to the sheep which operate somewhat against its welfare, the most prominent of these being its manner of prehension, and the influence of its fleece. Admirably as the cleft upper lip of the sheep facilitates the prehension of food, and enables this animal to live where others of a different species would starve, it nevertheless operates as a source of danger by enabling it to bite close to the roots of the herbage upon which it is feeding, and of thus picking up matter of a deleterious character in much larger quantities than would animals, as the ox, in which prehension is mainly accomplished by the tongue. Again, admirably as the fleece is calculated to protect its wearer against the effects of cold, it becomes a prolific source of mischief when cold and wet are combined, and there is perhaps no fact better proven than this—*that sheep will stand any amount of cold, but they cannot resist the combined influences of cold and wet*—and the reason is not far to seek.

The horse, the ox, and other short-coated animals can readily shake off a large amount of moisture from their coats, and evaporation goes on very rapidly. Not so, however, with the sheep; once the fleece becomes saturated with moisture, a long time must elapse before it can again become dry, and this condition is often aggravated by the wool becoming matted together by masses of dirt, particularly when sheep are feeding on turnips in dirty weather, and on clay lands in the winter; it is also further aggregated together by frozen snow and dirt. The skin glands of the sheep are far more active than those of other animals, and doubtless the quantity of sebaceous

matter secreted is much greater, and so far the skin itself may be better protected ; but I think it will be readily acceded that this cutaneous activity may and does constitute a source of danger when anything arises to suppress its normal secretions—such suppressive influences you have in sickness, and in cold combined with moisture and dirt. That free cutaneous transpiration and respiration is as necessary to the well-being of the sheep as to other animals, is shown by the effects of the too long retention in contact with the skin of the living of the pelt of the dead lamb in the case of affiliation, the little victim dying under these circumstances from apnœa. Prolonged interference with the functions of the skin leads to another important condition, viz., *organic disease of the kidneys*, a condition often found to obtain in Water Braxy, the renal derangement being vicarious to the suppressed cutaneous function. In reference to the ready manner with which the blood, and even the textures of the blood-vessels, are altered, I may direct your attention to the physical effects of the introduction into the circulation of various chemical agents, such as saline and metallic salts, organic germs, septic material, and even water. These effects are the perfect and permanent solution of the colloids, the diminution in activity of the white cells, the dissolution of the red ; and the weakening of the walls of the blood-vessels ; and as a consequence, systemic and local effusions and extravasations —even excess of cold, it has been shown, will sometimes produce similar results, and organic disease of the more important glands, as the lungs, liver, and kidneys, is a prolific source of blood deterioration and depravation. While such influences as those above mentioned are observed to result from excess of saline and mineral matters, it is in the opposite direction equally true that deficiency in such agents as are absolutely necessary for the building up of the tissues, the preservation of the fluidity of the blood, and the manufacture of the normal secretions, leads to very various and important dyscrasias—excess in one direction, deficiency in the other, producing identical results.

A knowledge of physiology is necessary to enable the stock-breeder and feeder to apply intelligent rules to the feeding and management of his stock ; unfortunately this knowledge is not widely distributed amongst this class of men ; and much as the necessity of some chemical knowledge to the agriculturist has been recently insisted upon, I hold that some acquaintance with physiology is equally if not more necessary to him, in order that the animals under his care shall be profitably and properly managed.

Animals by most men are looked upon too much as of the nature of machines or of steam-engines ; the intricate nature and delicate textures of the various organs are overlooked, and they are submitted to such a high degree of pressure that, like the steam-engine, they frequently yield to the strain put upon them, and the results are of a disastrous character alike to the animals themselves and their owners.

In some cases you will find men forcing their animals with injudicious quantities of food of a highly carbonaceous and nitrogenous character, such as cake and corn, with the not unfrequent result that the blood becomes overladen with fat and flesh-forming elements, assimilation and transformation are imperfectly performed, important organs, such as the liver, become congested, and fail in the due performance of their functions ; adverse influences, such as over-exertion, excitement, parturition, sudden alternations of weather, are brought to bear upon such systems, with the result that death is quickly produced by congestion or inflammation of the lungs or some other vascular organ—"Inflammation." On the other hand, animals are placed upon an unlimited supply of food rich in sugar ; fatty infiltration and transformation of the liver cells takes place, large quantities of fat accumulate in the system, the functional power of the liver is annihilated, and death results from a very

important alteration in the blood—*anæmia*—"Sickness." Again, food grown with excess of saline matter or phosphates, and probably at the same time surcharged with moisture, is allowed *ad libitum*, with the result that the blood and the blood-vessels are acted upon in the same way as in the case of experimental introduction of such agents directly into the circulation. Lastly, with others who think that any food is good enough for animals, materials contaminated with decomposing matter, or in a state of chemical change themselves—as decomposing turnips, moss, or other vegetable matter—are used as food, and the result is blood depravation and deterioration.

In many instances, I grant, the fault does not lie so much in the physiological ignorance of the stock-raiser as in the nature of the soil and herbage upon which his animals are depastured, and indifference to or ignorance of the effects of the application of manures. Herein, indeed, we have a frequent and unsuspected source of disease, and who is not aware of the fact that maladies previously unknown on a farm often make their appearance after the injudicious application of the different fertilizers in use, or the adoption of some different system of agriculture than that which has previously obtained? The knife here, it may be said, cuts both ways, as it is a fact equally well known that very frequently the adoption of such measures as those to which I have just referred, leads to the diminution in the number of cases of disease, and often to its total suppression or prevention. Again, the stock-breeder does not always recognise the necessity that exists for an occasional change of food in order that his animals shall grow and thrive, sheep especially being kept for a long period upon pastures for the improvement of which no measures have been adopted, it may be for generations. This lesson was taught me very early in life, as in the case of the farm upon which I was born, the losses in sheep were comparatively very trifling so long as a naturnl system of agriculture was followed, and so long as judicious changes of food were procured by the purchase of small fields of turnips, and of grazing from neighbouring farmers ; but immediately these conditions were reversed, and it was thought that the farm should be made to carry its own stock, the mortality became, and for some time continued, very great. This, too, I know is a tolerably universal experience in all parts of the kingdom. Now, gentlemen, having made these preliminary observations, let us see how far the statements I have made are borne out by practical experience.

It must be noted in the first place that the list of diseases which I gave in the early part of this paper includes, with one or two exceptions, all the more important maladies ; these exceptions we shall briefly refer to. They are—1. *Sturdy*, a parasitic disease, due entirely for its production upon the existence of the hydatid of the tænia cænurus cerebralis of the dog, in the cavity of the cranium, or in the brain itself. It has been said if we know the habits of an enemy we know how to encompass him, and perhaps destroy him. This is largely true with regard to disease, and yet we have here a malady, the cause of which is patent, the prevention of which is or should be easy, allowed to go on year after year claiming its holocaust of victims. What is the reason? is it ignorance or indifference, or what? It is certain the hydatid could never be brought into being, except it had a progenitor in the shape of the tapeworm of a dog ; it is equally certain that the latter could not exist without the former. Which is the easier to deal with, the hydatid or its progenitor? Manifestly the former, for we know its *habitat*, we can seek for it and effectually destroy it ; but we cannot dispense with the aid of dogs in the manipulation of our flocks and herds, and vermicides frequently fail to expel the whole of the worm from the intestines of its host, and even if we succeeded in doing so, it would become a source of danger, as we cannot prevent it finding its way into the land.

Now, in the case of the hydatid, what more easy to accomplish than the careful and effectual destruction of the head of every sheep which manifests the slightest symptom of Sturdy, instead of, as is too frequently the case, allowing the head to be sold, and after it is split open, the "bleb" to be extracted and thrown to dogs, or amongst the refuse! I say this proceeding is either begotten of ignorance or indifference, and as a result of it the disease is perpetuated.

Two other parasitic diseases which in various parts of the country annually claim their quota of victims are *Rot* and *Hoose*, both of them almost as easy to deal with as Sturdy, but both allowed to run their destructive course unchecked. I have stated on many occasions that Rot at least should be dealt with by the Legislature, and until it is, the scourge will not be got rid of, though stockowners have the means of prevention largely in their own hands, and very much may be done by the drainage and cultivation for a year or two of contaminated lands, the use of vermicide top-dressings and manures, the allowance of tolerable quantities of salt, the slaughter of affected animals, and the careful destruction of the whole of the intestines and the liver, instead of allowing the ova of the fluke to find their way in myriads into the sewers or on to the dunghill.

Malignant Enzootic or Epizootic Catarrh.—Sheep are from much the same causes as other animals very frequently the subjects of simple Catarrh—the affection running its course without much damage to the system, but in very changeable (what we might call epizootic) seasons, and in cold, wet pastures, more particularly in hill districts, the disease takes on a very malignant character. The fever is extreme, the submaxillary and neighbouring groups of lymphatic glands become the seat of inflammation, and suppurate; the nasal membrane tumefied, and finally ulcerated; nasal hæmorrhage is frequent, blood-poisoning with all its concomitant conditions, results, or death is produced by exhaustion, by asphyxia or inability to swallow; and in those animals which rally from the primary fever, death is frequently produced secondarily by pyæmia, *i.e.*, the formation of multiple abcesses in the lungs and all along the course of the facial and cervical lymphatic vessels, with their associated glands. This affection is sometimes produced both in sheep and cattle by exposure to the foul air of the holds of ships in bad weather, or where the ventilation is deficient.

Thrush.—Of this disease we also have two types, viz., the *mild* and *malignant*. Attributed by most authorities to a fungus, the *Oidium Albicans* both these affections are frequently due to dietetic irregularities and exposure to cold and wet, and when occurring, as they frequently do, in lambs, to a depraved condition of the mother's milk. Very simple treatment suffices for the combating of the mild form, which is the analogue of Thrush in the human subject; but in the case of the malignant, death is the result in the very great majority of cases, the blood becoming absolutely depraved, and the buccal and gingival ulceration taking on a very destructive character, the teeth being frequently forced out of the alveolæ by rapidly growing granulations. Professor Simonds, in his Cattle Pathology lectures, used to point out several important facts in connection with this disease, viz., that in the udders of the ewes pustular eruptions were sometimes developed simultaneously with the buccal eruptions in the lambs; that effusions of sero-sanguineous fluid were found in the inter-muscular connective tissue of the ewes, and that the disease sometimes made its appearance in peaty lands recently top-dressed with marl. Professor Axe some time ago recorded cases which he thought had been produced by succulent vetches largely infested with caterpillars or some such-like creatures.

In the causation of the disease, we have the key to its treatment and prevention.

Abortion is in some districts and in some seasons the bane of the sheep and the cattle breeder alike, and is frequently produced by ergoted grass-seeds. Independently, however, of this cause, we have others of a more general nature, such as improper or irregular dieting, over-stocking, fright, over-exertion, and exposure.

Some sheep-breeders seem to treat their lambing ewes like machines—feeding them generously during the rutting season, and as the period of gestation draws to a close, and half-starving them in the intermediate period. Such treatment is, to say the least of it, highly injudicious, quite contrary to all natural laws, and very frequently the cause of great loss, more especially where the ewes have been kept mainly on succulent turnips without a sufficient admixture of nitrogenous food. If there is one period of the life of a breeding animal during which an uniform and judicious management is called for, it is the period of utero-gestation, as animals are then highly susceptible to disease and readily acted upon by adverse influences, and the delicate bond existing between the mother and the fœtus is easily severed.

In reference to the more generally recognised diseases of sheep, it is necessary that to them I should devote a little more attention than I have bestowed on those to which I have just referred.

One of the most common terms applied to the diseases of sheep in this country is "Braxy." What the precise derivation of the term is I cannot pretend to say, and its significance is reduced to a minimum by the fact that several diseases presenting totally different characters are, in different districts, recognised as Braxy : thus we have "Red," "Water," and "Turnip Braxy." The term Red Braxy is, as I have already indicated, applied to those cases in which animals die in a comparatively short space of time, and in which after death the tissues or organs, or both, are the seat of violent congestion, or of extravasation of blood, giving them a red colour and an inflamed appearance. Now, while there is no doubt that in very many cases the lesions are due, purely and simply, to an altered (physiological, physical, and chemical) blood crasis, owing to which the coats of the blood-vessels become weakened, and the physical bond existing between the different constituents of the blood becomes loosened, requiring only some slight disturbing cause to bring about a complete upset in their equilibrium, there are numbers of instances in which the term "Braxy" does duty for Anthrax Fever—a disease, as you all know, due to or associated with a specific organism, *Bacillus anthracis*, —and from which, owing to the general similarity in their lesions, it could only be distinguished by the microscope, and by inoculation ; and even the latter test may be fallacious, as the blood in Braxy may be in such a condition as to induce a virulent form of Septicæmia, the lesions of which would conform largely in their general characters to those of Anthrax Fever. In England similar conditions are noticed, especially where animals are thriving rapidly, or when fed largely on turnips, the lesions assuming indifferently the characters of Black-quarter or Purpura and in most districts the victims are said to be suffering from *Blood-striking;* while Professor Simonds, in his Cattle Pathology lectures, used to apply to some of the cases the terms *Hœmatozymosis* or *Hœmatosepsis*, according to the condition of the blood and lesions. In all these cases it is observed—as in Scotland—that pregnacy acts as a predisposing, and parturition as an exciting, cause to the development of the lesions.

In breeding ewes, in Scotland, the term *Milk Fever* is applied to a disease identical in every respect with Red Braxy, except that from the deteriorated and depraved condition of the blood we have as a concomitant, erysipelatous inflammation of the womb and the udder.

In a paper on Joint-ill, read before the Scottish Metropolitan Association in June, 1876, I pointed out that the so-called Milk Fever—which I termed

Malignant Parturient Fever—was frequently associated with Joint-ill; was always caused by faulty dieting, such as keeping ewes exclusively on turnips (especially if grown with a superabundance of phosphatic manures); and was easily suppressed by change of treatment, dietetically, and the administration of alterative medicines. Further, I may here call attention to the supposed contagious nature of this form of Braxy. I say supposed, because I have on several occasions been able to point out that the disease occurs only in one particular lot of breeding ewes in a flock which has been subjected to the course of dieting indicated; while another lot, in which a different system of dieting has been adopted, has entirely escaped, even though the same shepherd has had the management of the whole. It must, however, be borne in mind that a shepherd, whose hands have been imbued in the decomposing discharges from the uterus of a sheep with a dead lamb may, by inoculation, induce Septicæmia in a healthy ewe.

In some cases of so-called *Turnip Braxy* we find after death universal effusion, the serum being highly charged with albuminous matter, so much so as to produce a glaze or varnish over the cut surface of the muscles when exposed to the atmosphere—the flesh in such cases is not only nutritious, but absolutely innocuous.

Water Braxy—Sickness—is in reality nothing more nor less than *Dropsy*, induced by food deficient in nutritive matter, and rich in salines or water, combined with long-continued wet and cold weather, the moisture acting upon the fleece in the way already indicated in the early part of this paper. The indications for its suppression are the administration of laxatives followed by restoratives—particularly iron and salt to combat the anæmia—nutrient diet, and dry bed and shelter. Several years ago I dealt successfully with one of the best flocks of sheep in East Lothian which were suffering to an alarming extent from water braxy.

Another dietetic disease—*Joint-ill*—is of vast importance to the sheep-breeder, and, indeed, in some districts to the breeder of cattle also. Inasmuch as I dealt at length with this disease in the paper already alluded to, read in Edinburgh in June, 1876, and published in the *Veterinary Journal* and *N.B. Agriculturist*, I do not intend to refer to the matter here further than to say that the opinions I then expressed as to its nature and pathology have not been altered but rather confirmed by subsequent experience, and confirmed too in a most remarkable manner by the testimony of Professor Robertson in the paper read by him at a meeting of the Scottish Metropolitan Association in September, 1878, and in which he showed that the disease could be experimentally produced by dieting.

Two other diseases closely allied to Joint-ill in their causation and results, and which in fact are often associated with it, are *Rickets* and *Softening of the Bones*—conditions owing their origin to faulty dieting, *i.e.*, to a deficiency in the food of the elements necessary for the building up of the hard tissues of the body, and marked by deformity and distortion of the limbs, dropsy of the head, and elongation of the ligaments and tendons, with dislocation of the joints, luxation of floating bones, and softening of the bone tissue. This, too, is a disease easy of suppression and of prevention by the adoption of a different system of agriculture and altering the general management of the ewes.

Lastly, allow me to direct your attention to these diseases in which the lesions are most markedly observed in connection with the great nerve centres—the brain and spinal cord. Of these, *Louping-ill* and *Swung Back* are of the greatest importance; the other two recognised forms of disease of the nervous system—*Thorter-ill* and *Trembles*—being of secondary importance, and often indeed only symptomatic of a deranged condition of the nerve centres, the former frequently being confounded with Sturdy when the hydatid

is located in the spine, the latter with the weakness which results from anæmia and debility.

Swung Back—"Paralysis of the hind-quarters," "Paraplegia"—has been far more common during the last season in the neighbourhood of Edinburgh than usual; great numbers of lambs having been brought into the different auction marts of the city in a very helpless and pitiable condition, and often in the last stage of inanition. Looking back only at the apparently favourable winter and spring we have enjoyed, we might be inclined to wonder why such cases have been so numerous, but a little reflection will lead to the conclusion that the conditions of these seasons have not been so favourable as would at first sight appear. As in the first instance animals, owing to the open weather, were allowed very small quantities, often none, of artificial food, and we all know the innutritious nature of winter herbage, no matter how plentiful it may be; and the spring herbage, though abundant from the nature of the season, was largely charged with moisture, and consequently innutritious; moreover, east and north-east winds were very prevalent throughout the spring: all these combined influences are pre-eminently calculated to produce an impoverished condition of the blood, and to lower the vital powers, and thus to produce congestion of delicate organs (such as the covering of the spinal cord) and effusion—the usual pathological conditions discovered in autopsy in these cases.

In referring to Louping-ill I know I am considering a disease of protean characters, *i.e.*, if we accept the very varying descriptions given of it by practical men, and equally protean in its causes. I think I need not point out to you the prominent position this disease has occupied of late in the general discussions which have taken place in different parts of the country on the diseases of sheep, and you have recently had a lecture delivered in this city on the subject by Professor Williams. I have said that Louping-ill possesses, according to general description, protean characters; by this I mean that if you ask a given number of practical men what they mean by Louping-ill, you will probably get an equal number of diverse answers. In some districts, however, as in Roxburghshire, tolerable uniformity of opinion on this point exists, and it is understood to apply to a form of disease in which there are marked symptoms of constitutional disturbance with, at the outset, more or less loss of power of one or both hind or fore limbs, great nervous perturbation on exciting the patient, and after a time complete paralysis with rapid wasting and probably disease of one or more joints, and the formation of abscesses in the more prominent parts of the body.

On *post-mortem* examination certain changes in the spinal cord or brain, or in their meninges, such as congestion of the blood-vessels, softening of the cord, thickening of the meninges, and effusion of serum (coagulating after death into a gelatinoid, imperfect clot), are observed; these changes being the result of inflammation, or probably of simple congestion, with weakening of the walls of the capillaries. The joint lesions are very similar to, sometimes identical with, those seen in Joint-ill, while the abscesses are the result of extravasation of unhealthy blood—their existence in the more prominent parts of the body being easily accounted for by the pressure to which such parts are subjected.

That the disease should be so largely fatal is easily understood when we look at the tissues in which its lesions are localized; that lambs should be affected simultaneously with or subsequent to the ewes is natural, seeing that the milk of the latter must be of a very inferior, and probably of a very deleterious, quality.

I have said that the causes of the disease are very various. It has been attributed to indigestion, to innutritious food, to the prevalence of east and north-east winds, to ergoted grass-seeds, to peculiarities of soil, and to ticks.

And I must here confess that it is sometimes difficult to reconcile the many statements that are made on this point, and impossible to devote sufficient time to the analysis of each. I can only refer to the different theories entertained very briefly. In reference to indigestion, it is a well-known fact that in no animal is nervous derangement so markedly dependent upon, and so readily produced by, gastric disturbance, as in the ruminant; it is illustrated in the great nervous excitement, and oftentimes paralysis, which accompanies gastric indigestion or irritation in cattle; it is seen in the passage of foreign bodies through the stomachs of cows, in distension of the rumen with food and gas, and in gastritis and enteritis, no matter how they may have been induced. I have seen the goat (a creature closely allied to sheep) show every known form of nervous derangement—epilepsy, paralysis, lock-jaw, delirium, coma—when suffering from constipation of the bowels or gastric derangement; and I some time ago drew particular attention to this, as it occurs in cattle, in a paper on gastric derangement in this animal, read before the Scottish Metropolitan Association. In sheep I have seen similar conditions produced under like circumstances, and on *post-mortem* in each of these animals we find either marked cerebro-spinal congestion or effusion.

The ergot theory had at first sight an appearance of feasibility, but the practical tests to which it was subjected by Mr. Webster, of Hawick, effectually, I think, disposed of it, at least in so far as its being the great cause, or even a separate factor in the production of the disease. The inquiry, however, was not without value. It served to show to what an enormous extent ergotism exists, Mr. Brotherstone pointing out that he had found it in no less than twenty-three different grasses. That ergot, when abundant, must exercise a very deleterious influence upon animals (even upon horses and cattle) there can scarcely be any doubt.

Ticks have always been associated more or less closely with the etiology of Louping-ill. They have for a long time been looked upon as an actual cause by many people, as a mere coincidence by some, and as a predisposing and exciting cause by others. My opinion was expressed on this point in answer to queries furnished by the Teviotdale Farmers' Club some time ago, to the effect "that the presence of tick was a mere coincidence, but that when existing in large numbers it was easy to see they would, by inducing debility, act as a predisposing, and by irritation as an existing, cause, to the development of the disease." Professor Robertson, in reference to this matter, expressed the opinion "that it was possible—supposing such to exist—they would act as carriers of disease-germs from one animal to another, but he failed to see how they could of themselves act as an actual cause in the production of such a disease as Louping-ill." This opinion is only in accordance with what we know as to the germ-carrying powers of all carnivorous or blood-feeding insects—*i.e.* assuming that a specific germ exists. While most of us look upon the tick in the light above mentioned, Professor Williams in his paper (and I may here observe that I am only judging from newspaper reports, as I was not aware when his essay was to be read, and consequently was not present to hear it) seems to assign a more important *rôle* to this little creature, for he says "that not only has he found a certain organism in the gelatinous effusion in the neural canal of the Louping-ill sheep, but that he has found a similar organism in the tick—*whether removed from diseased or healthy sheep.*" I have italicized the last few words, as they are condemnatory, I think, of the whole theory, as if present in healthy sheep, where did the organisms come from—diseased sheep, I suppose? In answer to this, I may observe that *Louping-ill exists where there are no ticks;* and so far as I know of the habits of these little creatures they are only found in the sheep for a limited period—viz., until

they are replete with blood, when they voluntarily loose their hold upon the skin and fall upon the grass, there remaining until the whole of their sanguiferous meal is digested. Moreover, it is recorded by Professor Simonds and others, that in the years 1869-72 a plague of ticks was experienced in Kent, but no Louping-ill is mentioned, nor did it exist. Further, in connection with this matter of specific organisms in the effused spinal fluid of Louping-ill, I may observe that I have not been able to discover such, that Mr. Geddes failed in discovering them, and ordinary organisms can only be looked upon in the same light as the organisms described by numerous pathologists in very varied and unnumbered pathological productions ; most certainly, if a special organism exists and is the cause of the disease, we can understand how the tick (why not the Red and the flesh fly also ?) could become a carrier of the germs ; but mere assertions in such matters as these cannot be accepted as truths until determined satisfactorily by properly conducted experiments. That ticks should exist in lands where Louping-ill is seen is not remarkable, seeing that the soil and situations in most cases are favourable alike to the development of the former and to the production of the latter. Lastly, in reference to ticks, I may observe that Louping-ill is often seen in the autumnal months, ticks rarely—even in situations where they abound in the spring ; and I have in my possession at the present moment a lamb, procured for me some time ago by Mr. James Pow, M.R.C.V.S., from the Liddesdale district, that exhibited all the symptoms of Louping-ill with Joint-ill combined, in the skin of which not a tick was to be found.

While giving ticks a place in the causation of the disease, I cannot, for a moment, in the present state of our knowledge, agree to assign to them the important position claimed by Professor Williams.

From my previous knowledge of the disease, from the facts set forth in the published report on "Louping-ill" of the Teviotdale Farmers' Club, with the discussion which took place at a meeting of that society as the result of the remarks made by Mr. Aitchison on submitting that report to the consideration of its members, coupled with the opportunities I have recently had afforded to me (by the kindness of Sir Walter Elliot, of Wolflee, Mr. Pow, Mr. Carruthers, of Hindlee, Mr. Elliot, of Wolfhopelee, and others) of inquiring into the matter, I am forced to the conclusion that the disease is due to a combination of causes—pre-eminently calculated to bring about such results—as indigestible and innutritious food, deficient supply of food, over-stocking, the lowering effects of changeable weather and exposure with, in some instances, the irritation and debility produced by ticks ; that these causes produce a deteriorated condition of the blood, and, as a result, imperfect nutrition of the cell structure of the great nerve-centres, leading to Congestion or Inflammation or passive Dropsy of these centres or their coverings. If we look closely into the matter we find that improved cultivation of the land—such as eating of the old fog and benty grass and moss by cattle, or burning it ; liming, and in some instances draining the land—has frequently been the means of preventing attacks of this disease ; and I am satisfied that if the measures above alluded to (with a tolerable allowance of salt, and, where necessary, of artificial food, and as far as practicable protection from extremes of weather) were judiciously adopted, we should hear much less of the ravages of Louping-ill than we now do. As to the therapeutics of the affection, good cows' milk, in lambs, blood remedies such as iron compounds—Parrish's syrup *par excellence*—chlorate of potash, salicylate of soda, with absorbents and the application of stimulants over the region of the spine, and attention to the bowels, are indicated. Ticks also should be destroyed, or their attacks prevented by the application of tarry compounds to the skin.

I am aware, Mr. President and gentlemen, that this paper is of a fragmentary and imperfect character, and that it does not deal exhaustively with any one of the subjects to which I have alluded ; and so far I owe you an apology, qualified, however, by the remark that my object in writing it has been rather to stimulate my professional brethren in this great sheep-breeding country to take a little more interest in matters connected with the production and prevention of ovine diseases, and thus assist in benefiting the community at large. A further object I have had in view is that of directing the attention of sheep-breeders to the necessity which exists of themselves seeking for the causes of disease amongst material agencies and influences, and not to allow themselves to be led astray by shadows while the substance lies within reach of their grasp ; and when they have found the causes, to use a little energy in their removal. I cannot close without briefly calling your attention to a proceeding which has been brought more under my observation during the present than in any previous season, viz., the cruelties which are practised by stock-owners (largely as the result of ignorance, doubtless, but I am afraid very frequently from indifference also) in keeping diseased animals lingering about in misery and suffering from week to week, and in finally sending them into the various auction marts to be sold, after being knocked about and trampled upon by other animals for hours together. The sights of this description sometimes seen are deplorable, disgraceful, and melancholy ; it were surely better, where an animal is seized with an illness from which it is not likely to recover, to slaughter it at once, and utilize its flesh, than to keep it until it becomes a living skeleton, and absolutely useless for any purpose save, perhaps, that to which the carcases of many of these poor creatures are consigned—that of manufacturing mutton pies, saveloys, polonies, or other such like delicacies.

After the reading of the paper, the President suggested that as it was a very important subject, he would move that the discussion be deferred till next meeting.

A vote of thanks to the essayist and President terminated the meeting.

GEORGE C. HILL, *Secretary.*

Army Veterinary Department.

Gazette, September 22nd.

Inspecting Veterinary Surgeon James J. Meyrick, to have the local rank of Principal Veterinary Surgeon while employed in Egypt.

The following Veterinary Surgeons of the First Class, to have the local rank of Inspecting Veterinary Surgeons while employed in Egypt :—Walter Burt, Francis Walker.

Notes and News.

ANTHRAX EXPERIMENTS.—The French Minister of Agriculture has placed a further sum of 50,000 fr. at the disposal of M. Pasteur for his scientific researches into the contagious diseases of animals. The illustrious *savant* had already received grants of 50,000 fr. in 1880 and 40,000 fr. in 1881.

VETERINARY HONOURS.—Our colleague, H. Zundel, of Alsace, has been elected an Honorary Member of the Brussels Academy of Medicine, and has also been made a Chevalier of the Oak-crown of the Netherlands. The Acclimatisation Society of Paris has awarded a prize of 500 francs to Dr. Harz, of the Munich Veterinary School, for his researches into the destructive

disease attacking cray fish, a notice of which has already appeared in this journal.

THE BERLIN VETERINARY SCHOOL.—The German Government has granted the sum of 200,000 marks (£10,000) towards erecting a patho-anatomical institution, to be attached to the Berlin Veterinary School.

Correspondence, etc.

KNEE DISEASE IN HORSES.

SIR,—In the year 1873 evidence was taken in the House of Lords respecting the deterioration of blood stock in England, and mention was made by a member of the veterinary profession, who was examined, that a disease called "Knee disease," more particularly affecting the "Wild Dayrell" breed, was again becoming prevalent, after not exhibiting itself for a number of years. Can you, or any of your readers, kindly inform me what this ailment was?

We have the "Wild Dayrell" blood here, and latterly I met with a case in one where the knee joints were much enlarged.

There was neither heat nor pain, but the animal could not be trained, owing to this defect, as lameness supervened upon a stiff gallop.

It died subsequently, and not having been present when the carcase was buried, I lost the opportunity of examining the parts.

A gentleman residing in Adelaide (William Filgate, Esq.) has also observed the same thing, and tells me the paper in which the evidence will be found is Parliamentary Blue Book, No. 325, of 1873, which I cannot obtain here. Yours truly, THOMAS CHALWIN, M.R.C.V.S.

Adelaide. *Government Veterinary Surgeon, South Australia.*

South Australia, *July 13th*, 1882.

[Will any of our readers who know something of the Wild Dayrell stock, oblige us by giving their experience of the defect alluded to?]

THE NEW BOARD OF EXAMINERS.

DEAR SIR,—I shall be much obliged if you will kindly afford a corner in the next number of the VETERINARY JOURNAL for a few remarks which may not be inopportune at the present moment. The present Council is not likely to be called upon to perform a duty of greater importance than in the approaching election of a new Board of Examiners; and considering that the several appointments will be for five years, it will not be amiss to look ahead, and to interchange any helpful thoughts on the subject which may occur. A general feeling in the profession prevails in favour of the examiners being selected in future from amongst ourselves, instead of our continuing to invite the co-operation of the medical profession in the matter; and should this course be acted on, it will be desirable, as it occurs to me, to testify to our own integral strength, whilst at the same time distributing to the full in our own ranks the honours at our disposal, by electing a full complement of examiners to constitute the Board, that each may fill a post in the several divisions, in preference to delegating to a less number a plurality of subjects. The diploma would thus certainly be enhanced in appreciation by the greater number of names attached to it. I should therefore propose to confine each class as much as possible to its own separate examiners.

Class C, the final examination, embraces matter of such importance to all concerned (to the profession, to the examiners, and to the candidates), that I must not hesitate in offering a suggestion in connection with it. It is intended that in future the *same* examiners shall officiate in the Pass examinations in England and in Scotland, and it is proposed to elect *only two* examiners to this office, *i.e.*, two for the subject of "Horses," and two for the subject of "Cattle." At the present time this examination is of a dual character, there being the practical examination, and the final oral examination, both of which must be passed by the candidate to enable him to obtain recognition of his merit in the event of his being successful in one only.

The inconvenience of this arrangement, and its hardship on the student, have been recognised, and accordingly, in a short time, the alteration will come into force, making these two examinations distinct and independent.

I would submit that it is undesirable to place the grave responsibility of these examinations on *two* examiners only, and as the result of my experience and no little thought on the subject, I consider it would be better to intrust it to *four* who should act in pairs, interchangeably and in rotation, thus, A and B, B and C, C and D, and so on.

The advantages of such a course would be the increased freshness and vigour imparted to the examinations; also, in the event of inability on the part of an examiner to attend on any given occasion, the Council would have the satisfaction of holding in reserve a ready substitute in an approved and duly elected member of the Board.

The College would not incur additional expense in thus augmenting the number of its representatives on the Board, but would, by so much, strengthen its efficiency.

Yours faithfully, J. ROALFE COX.

Mount Street, London. *September 14th*, 1882.

DISEASE IN CHICKENS.

DEAR SIR,—Whilst attending a horse at Kinver Vicarage, a few days back, I noticed in the paddock a number of chickens, which appeared unwell. I obtained permission from the vicar's wife to make a *post-mortem* examination of one, and promised to send her particulars. They are as follows:—Nothing abnormal, except the lungs, which are filled with a yellow cheese-like material, a large amount of congestion, etc., existing. There are a large number of fowls (principally chickens) dying, about this part, with this affection. I am sorry that I must admit that I am ignorant as to the cause, etc.

Perhaps some of your readers may kindly give me some information. I will send the lungs, should you think it sufficiently interesting.

I am, faithfully yours,

Veterinary Infirmary, Market Street, Stourbridge, *Sept. 13th.* ROBERT J. DAWSON.

[If our correspondent will send a dead chicken to the Brown Institution, Wandsworth Road, London, S.W., a careful examination will be made of it.]

EPILEPSY AND MEGRIMS.

DEAR SIR,—A cart-horse, a few days back, was brought to our infirmary for advice, the owner informing me that the animal was subject to fits. He had owned him for four years, and it was only during the last week or two that he had noticed him to be subject to these attacks of "giddiness."

On examining him I noticed nothing unusual; the pupils were of a uniform size, and not larger than they should be. The collar was the same that he had worn for years.

I looked upon it as a case of Megrims, but as we so seldom, now-a-days, get animals affected with that malady, I thought I would send the particulars to THE VETERINARY JOURNAL.

I gave him ʒvi. dose of Barbadoes Aloes, a day or two to rest, and ʒj. Potass. Bromid. morning and night, and advised them to work him in a breast collar, and apply cold water to his head, continually, during the fits.

I see that the old veterinary writers look upon "Megrims" and Epilepsy as the same disease. I must admit that I do not know if the symptoms during life and the *post-mortem* appearances are the same in Epilepsy of *man* and "Megrims" of the horse.

I told the owner that the animal's offspring would probably be affected, if the fits continued.

I am, sir, faithfully yours,

EPSOM.

CORRECTION.

In the list of students who recently passed their first examination in Edinburgh, and which appeared in last month's JOURNAL, A. Isledhill should be A. Gledhill (New Veterinary College).

Communications, Books, Journals, etc., Received.

Communications have been received from T. Chalwin, South Australia; G. Gartside Mayor, Kirkham; A. C. Robertson, Worcester; J. W. T. Moore, Birkenhead; J. Roalfe Cox, London; R. J. Dawson, Stourbridge; "Epsom;" J. C. Berne, A.V.D., Cahir; R. Rutherford, Edinburgh; A. G. Rolls, Arundel; G. A. Banham, Cambridge; E. C. Hill, Glasgow; A. Gledhill, Halifax.

BOOKS AND PAMPHLETS: *G. Chenier*, Le Service Vétérinaire dans les Armees de l'Europe; Bulletin de la Soc. Roy. Protectrice des Animaux; *C. Siegen*, Bericht über die Pasteur'sche Impfung gegen Milzbrand in Herve; *J. J. Meyrick, Woolwich*, Stable Management and the Prevention of Disease among Horses in India; *G. Fleming*, Animal Plagues, their History, Nature, and Treatment (Vol. II.); *G. M. Humphry*, Vivisection, what Good has it Done; *J. Simon*, Experiments on Life; *W. Bowman*, Address in Surgery; 'S. Rijks Veeartsenijschool te Utrecht Programma.

JOURNALS, ETC.: *Journal de Médecine Vétérinaire; American Journal of Insanity; Echo Vétérinaire; Deutsche Zeitschrift fur Thiermedicin und Vergleichende Pathologie; Oesterreichische Vierteljahresschrift für Wissenschaftliche Thierheilkunde; Wochenschrift für Thierheilkunde und Viehzucht; Der Thierarzt; La Clinica Veterinaria; Recueil de Médecine Vétérinaire; Revue Vétérinaire; Archives Vétérinaire; La Presse Vétérinaire; American Veterinary Review; Annales de Médecine Vétérinaire; Live Stock Journal; Tidskrift för Veterinär-Medicin; Lancet; British Medical Journal; Medical Press and Circular; Chicago Live Stock Journal; Edinburgh Medical Journal; Nature; Squire; Proceedings of the Medical Society of Kings; Breeders' Gazette; Australasian Veterinary Journal.*

NEWSPAPERS: *Norfolk Chronicle; Cambridge Independent Press; Nordwest; Picton Colonial Standard; West Cumberland Times; Glasgow Citizen; Freeman's Journal; Belfast Northern Whig.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

NOVEMBER, 1882.

RECOVERIES FROM RABIES.

BY HAROLD LEENEY, M.R.C.V.S., BRIGHTON.

UNTIL quite recently it has been held that recovery from Rabies is impossible, and with an exceptional experience of this malady, I should have endorsed this opinion, but for two cases, a notice of which may interest the readers of the VETERINARY JOURNAL.

The first was a fox-terrier dog, in whose company I had previously had good sport, and of whose manners I was therefore the better able to judge when he was ill.

He was brought to my infirmary with the mouth open, in the manner so characteristic of Rabies, and so different from that of a mechanical impediment to its closing. The swollen and lacerated tongue, the discolouration, the dryness, the glassy and wandering eye, the snapping at imaginary objects, the thirst, and (what I have insisted upon before) the howl, were all present, and unmistakable to any one who has seen anything of this malady.

For three days the patient remained in about the same condition, which I may remark is not usual, for after the jaw drops, it has been my experience that they get rapidly worse, and die in from three to five days, and often less. Having a sentimental rather than a scientific interest in this case, I thought some degree of relief might be obtained by throwing upon the tongue some solution of chloral, which I did with a syringe, from time to time, and apparently with the result of producing a sedative

effect. Whether or no this really contributed to his recovery, I cannot hazard an opinion; but that he did gradually return to his normal condition I can testify, and in ten days from the time he was admitted he was well, and I saw him rabbiting a year afterwards.

CASE II.

In a lodging-house were two dogs, owned by different persons. The owner of what I will call No. 1 brought him to my infirmary, where he died of unmistakable Rabies. Before he was brought to me, he had bitten No. 2, whose owner would not consent to have him destroyed after the danger had been duly commented upon. Eight weeks afterwards, No. 2 was brought to me with all the appearance of Rabies, and was confined in a safe cage, where he had access to milk and gravy, but no solid food, and no medicine whatever. His symptoms gradually abated, and he made a perfect recovery.

Will either of these dogs be liable in the future?

ANTHRAX IN CACHAR AND MANIPUR, INDIA.

BY J. GRIFFITH EVANS, M.D., ARMY VETERINARY INSPECTOR, MADRAS.

[The following interesting reports, relating to most destructive outbreaks of Anthrax in certain districts in India, were furnished to the Government of that country during last year, and because of their value are now published.]

To the Deputy Commissioner, Cachar.

Silchar, Cachar, *February 3rd*, 1881.

1. SIR,—I have the honour to state, for the information of the Chief Commissioner, that I had the opportunity on the 28th ult. —which I was waiting for—of making a *post-mortem* examination of two ponies which had died of the so-called "Manipuri Disease," on the Bijoypore Tea Garden, Berkholas, and which proved to be Anthrax Fever, commonly known in Bengal as the "Loodiana Disease." No other cases have been reported in the district this season, so that I have had no chance of seeing one alive; but all the reports made to me since I came here led me to believe that the disease was Anthrax, which has been now placed beyond doubt

by the microscopic examination of the blood of these two cases *post-mortem*.

2. *Symptoms*.—The disease is essentially due to the presence of a fungus called the *Bacillus Anthracis* in the blood. The symptoms vary very much, depending upon which of the internal organs may be mostly affected by the yellow gelatinous exudation that is always more or less poured out into the connective tissue, and they may conveniently be grouped into three distinct sets, thus :—

A. *Cerebral*.—Drowsiness and a straggling gait, etc. In these cases the patients sometimes die apparently of apoplexy—in the early stage. They are found dead in the morning, though supposed to be well the previous evening.

B. *Respiratory*.—The most common and dangerous symptom of this group is a swelling of the throat, extending more or less down the neck, and also into the larynx, closing the opening into the windpipe, and causing death by suffocation. Probably the greatest number of cases die from suffocation.

C. *Abdominal*.—When the abdominal organs are mostly affected the symptoms are very like those of colic, or of common inflammation of the bowels.

3. In a large number of cases which do not terminate soon, there are indications of each of these groups of organs being more or less affected.

4. There is always a high degree of fever present, manifested by the high temperature of the blood, as indicated by a thermometer placed in the rectum or by the feel of the fingers placed in the mouth. In most cases, also, there is a sluggishness of disposition for a day or two before any more serious symptoms appear, though the animal may not refuse food or appear otherwise ill. It would be advisable, therefore, whenever gentlemen notice their ponies unusually sluggish, to feel the temperature of the mouth with the hand, and if it is hot take warning. A high temperature is very characteristic of the early stage.

5. *Incubation*.—The stage of incubation, or the period from when the virus is taken into the system until the first symptoms of the disease appear, is not exactly defined. In Bengal it is supposed to be not more than four or five days. I have received no

evidence upon this subject in Cachar, but Captain Willans, R.E., and Dr. O'Brien, Civil Surgeon at Shillong, have reported very interesting cases to me, which appear to have been in the stage of incubation for six or seven days at least.

6. *Mortality.*—I have not heard of a case recovering from this disease in Cachar, and few, if any, have survived more than twenty-four or forty-eight hours. The cases reported to me at Gauhati likewise all died in a very short time, with the exception of one or two. But the cases at Nungpoh (thirty miles from Gauhati, on the Shillong road) lasted about ten days on the average, yet none of them recovered.

7. I have received no evidence of the disease affecting cattle in Cachar; but Captain Willans, R.E., in charge of the Shillong and Gauhati road and tonga service, informed me that many cattle died suddenly when at work near Nungpoh last year. The symptoms are not well recorded, but I am of opinion the disease was Anthrax.

8. *Remedy.*—I am very sorry to say that no cure has yet been discovered. The chances of recovery depend (1) upon the intensity and amount of the virus taken into the system, and (2) upon the group of organs chiefly affected by the exudation. In Bengal the rule is, when a large number of horses are attacked about the same time at one station, those attacked at the commencement of the outbreak all die quickly; those next attacked have the disease less acutely, and many of them recover; those attacked last have the disease lightly, and most, if not all of them, recover.

9. *Infection.*—The virus of the disease appears to be associated most intimately with the spores of the bacillus in the blood. I have examined many cases in Bengal and the Punjab, but I never found spores developed in the bacillus before the death of the animal affected, though I found them a few hours after death. In accordance with that also, I have found no good evidence, in this district any more than in Bengal, of the disease having been communicated by one animal to another before death. Horses standing alongside of an affected animal are not apparently very liable to take the disease; but it would be rash to say there is no danger, especially should the sick animal have a discharge from

the nose, which might by some chance be transferred to the mouth or nose of a healthy animal standing near ; for I have found the *Bacillus Anthracis* in the nasal discharge. Therefore it is always advisable to segregate cases of Anthrax as early as possible. It is common for horses standing in the same stable to get the disease about the same time—not from each other, but from having been subjected to the same common cause.

10. But though the living animal is not very likely to transmit the disease to others, the dead animal is exceedingly dangerous, and the greatest care should be taken, therefore, in the disposal of the carcase, as the following facts show.

11. The fatal disease among the wool and hair-sorters, which has caused much excitement at Bradford lately, has been proved to be Anthrax Fever. The wool and hair-sorters got it from breathing the dust rising from the wool and hair brought from abroad, which was no doubt taken from, or had been in contact with, animals which died of Anthrax. The refuse water, after washing that wool or hair, was allowed to run over a grass field for the purpose of irrigation. Cattle were allowed to graze afterwards on that field ; some of them got the disease and died, though it was not known in the district before, nor among any cattle there since which were not in that field.

12. The spores of the *Bacillus Anthracis* are wonderfully tenacious of vitality, and they remain in the ground or dried elsewhere for an indefinite length of time, ready to develop and propagate the disease whenever they are conveyed into suitable blood. It has been proved that when animals have been buried deep in the ground, the earthworms bring the spores again to the surface after a long time. I quote the following from the *British Medical Journal* of the 25th December last. "Pasteur's recent researches on the etiology of charbon (a form of Anthrax) show that this earth-mould positively contains the specific germs which propagate the disease, and that the same specific germs are found within the intestines of worms. The parasitic organism or bacteridium, which, inoculated from a diseased to a healthy animal, propagates the specific disease, may be destroyed by putrefaction after burial But before this process has been completed, germs or spores may have been formed which will resist the putrefaction process for

many years, and lie in a condition of latent life, like a grain of corn or any flower-seed, ready to germinate and to communicate the specific disease. In a field in the Jura, where a diseased cow had been buried two years before at a depth of nearly seven feet, the surface earth not having been disturbed in the interval, Pasteur found that the mould contained germs which, introduced by inoculation into a guinea-pig, produced charbon and death. Further, if a worm be taken from an infected spot, the earth in the alimentary canal of the worm contains these spores or germs of charbon, which, inoculated, propagate the disease. And the mould deposited on the surface by worms, when dried into dust, is blown over the grass and plants on which the cattle feed, and may thus spread disease. After various farming operations of tilling and harvest, Pasteur has found the germs just over the graves of diseased cattle, but not to any great distance. After rains or morning dews, the germs of charbon, with a quantity of other germs, were found about the neighbouring plants, and Pasteur suggests that in cemeteries it is very possible that germs capable of propagating diseases of different kinds, quite harmless to the earthworm, may be carried to the surface of the soil, ready to cause disease in the proper animals. The practical inferences in favour of cremation are so strong that in Pasteur's words 'they need not be enforced.' "

13. *Disposal of Carcases.*—If it is not practicable to burn effectually all the carcases of animals which die of Anthrax in this country, I would most strongly urge the necessity of having as little as possible of them cut open, so that no blood may be sprinkled about, and conveyed by the dust, etc., to other animals. It should be buried whole, deep enough to prevent jackals exhuming it, and a large fire of jungle grass or bamboo, etc., made on and about the grave occasionally afterwards to prevent anything which animals would eat growing there, also to destroy the germs which may be brought to the surface by worms. The space should be enclosed by a bamboo rail, and a mark put up to note the place, for the benefit of future tenants of the land.

14. I have no facts to prove that birds or beasts of prey may propagate the spores of the Bacillus with their excreta, but analogy would lead one to suppose they do; for the spores of many other

fungi, as well as the seeds of plants, are sown broadcast by animals in that manner. It would seem therefore advisable not to give the carcases of anthracoid animals to the vultures and jackals.

15. I shall reserve further remarks upon the natural causes favouring the development of the Bacillus and of the disease—also the preventive means—until after I shall have completed my investigations on the Shillong and Gauhati road, whither I proceed from here to-morrow.

The sanitary conditions appear to be somewhat different there from what they are in Cachar.

Calcutta, 12*th March*, 1881.

SIR,—In continuation of my letter, No. $\frac{B}{19}$, of the 3rd ult., I have the honour to state, for the information of the Chief Commissioner, that when I learnt the disease which I had to investigate prevailed more in the adjoining Native State of Manipur than at Cachar, I placed myself in communication with Col. Johnston, the Resident, who has kindly furnished me with the following particulars :—

The Disease in Manipur.—A. The average altitude of the Manipur Valley, a plain of 650 square miles, surrounded by mountains, is 2,550 feet.

B. The disease appears there at all seasons of the year.

C. The soil throughout the valley is a clayey loam. Ponies are confined to the Valley, and the disease appears equally in all parts of it.

D. The disease is said to appear equally among stabled and unstabled ponies.

E. Most of the ponies are fed upon soft succulent grass growing on low inundated land, or on dried up swamps.

F. The percentage of deaths is said to be about seventy, which Col. Johnston thinks is certainly not under the mark. Death, as a rule, comes on in a few hours.

G. The disease is thought to be contagious.

H. Ponies are thought to be perfectly safe from further attacks if they have survived the disease once.

1. The Manipuries have an idea that too hot a stable is likely to bring on the disease, also that it may be brought on by having

ponies out in the dew at night, a belief which Col. Johnston does not share in, as he has never lost a pony by it out of eight or ten, though they are constantly out in all weather.

2. *When came the disease to Assam?*—I have not been able to obtain any exact data as to when the disease appeared first in Cachar, or in the Brahmaputra Valley. Cases have occasionally occurred in Cachar for at least ten years past. Eight ponies belonging to Europeans were attacked in one stable on the Doloo Tea Garden, a high sandy plateau, nine years ago, and they all died within thirty-six hours. I am told that a great many ponies belonging to natives, pasturing loose on the clay rice-fields in that neighbourhood, died of the disease about the same time. The attention of the authorities does not appear to have been particularly drawn to it before the dry season of 1878-9, when it broke out generally as an epizootic, both in Cachar and the Brahmaputra Valley. At Gauhati and in the district, I am told about two-thirds of all the ponies and horses then died. I have received no definite estimate of the mortality in Cachar, but it was certainly very great. It is worthy of notice, in passing, that the disease has not yet appeared in the district of Sylhet, nor on the high Khasi and Jaintia mountains, which separate Cachar from the Brahmaputra Valley, except at Shillong, where a few cases were imported from Nongpoh and Gauhati. In the dry season of 1879-80 the disease was less fatal, and in the present season, now ending, it has been almost absent. I am sure little notice would have been taken of its existence this season if it had not been so fatal in the past few years.

3. "*Epidemic Years.*"—The disease has thus the character of other epizootic and epidemic diseases, such as cholera, small-pox, etc., in having "epidemic years." The parasitic diseases affecting members of the vegetable kingdom, such as the "blight" of wheat, and the "rot" of potatoes, etc., have also their years of devastation.

4. A Manipuri horse-dealer named Narain Sing, who has been living thirteen years at Gauhati, and who appears to know more about horse diseases than any other native there, informed me that he never saw or heard of a case before the dry season

of 1878-9, and that was confirmed by Mr. Bell and Mr. Aitken, tea planters, the oldest European residents at Gauhati. Narain Sing further told me that in his travels afterwards, he found that the disease came up the Brahmaputra that year from Eastern Bengal, and passed on to Upper Assam, causing great mortality among the ponies of the natives everywhere, extending from the river a considerable distance in some places—so far as Nowgong, etc. This, I am informed by the Deputy Surgeon-General, is the usual progress of Cholera also in that valley. Narain Sing in the course of conversation, told me he visited Sylhet last year to buy ponies, and I asked whether he heard of the disease being there, and he replied that the natives of Sylhet knew nothing whatever about it. His "brothers" (Manipuries) living at Sylhet told him the disease had not been there, but was very bad in Cachar.

5. There is good reason for believing that the disease came from Burmah to Manipur, and from thence to Cachar, where its progress has been arrested in that direction.

6. *Causes.*—What can have been the cause of such a sudden general development and extension of the disease? Was it something *per se* travelling invisibly across country on "the wings of the wind," finding more favourable conditions for the manifestation of its presence in some localities than others? or else was it simply a general change in the conditions of life extending over a vast area? Investigations are not yet agreed. Some say the causes are those relating to the geological formation of districts, others think they relate more to the food, others attribute the disease to the drinking water, and others think the virus is in the air.

7. Probably there is an element of truth in each theory, and the cause may be explained thus:—

A. A general change in the conditions of life of the lowest forms of "mould" and microscopic fungi, such as a modification of light, heat, electricity, moisture, etc., allows them to multiply immensely more than usual, and causes the special property of each kind to be intensified, those possessing virus to become more virulent, etc.

B. These organisms are then carried about by the atmospheric

currents with the myriads of other things that are invisible to us, except in the sunbeam, and they are often conveyed a long way from where they are generated. Particles of smoke and sand are daily carried many miles in the air.

C. The danger of infection is in the inverse ratio of the distance from the source, exactly as smelling-salts smell stronger near the mouth of the bottle than a foot from it. When, therefore, several horses in the same stable die the same day, it is probable the source of the virus is not far off.

D. The organisms carried by the air may be deposited in the food or in the drink of horses, or they may be inhaled.

8. Much of the disagreement of investigations is due to hasty conclusions on the "*post hoc, propter hoc*" method of reasoning, each attributing the disease to whatever he finds worst in the sanitary circumstances of the cases which come under his observation, without due regard to other cases.

9. *Geological Conditions.*—The disease is reported to have prevailed on granitic formations in Scotland, Switzerland, Lapland, and Finland, as it does at Gauhati and Nungpoh in Assam; on the Cambrian and Silurian formations in Scotland and America; on the lime in England, Russia, Switzerland, and Malta, and on the old and new red sandstone in England and Scotland. So that the virus cannot be the product of any particular rock formation. There is one geological feature, however, most common wherever the disease is enzootic in the hot season of cold climates, and in the cold season of hot climates, that is, a stiff retentive clay soil, or some rock holding the subsoil water near the surface. In Europe the disease is reported to have disappeared from swampy districts after they have been drained, though it was very common previously. Granite would act like clay in retaining the water, stagnate, and decomposing organic matter. So would also ferruginous conglomerate which is common in Cachar. I examined perpendicular sections over ten yards deep, cut by the river as it passes through the flat lands of Cachar in many places, and found alternate layers of blue clay, sand, and ferruginous conglomerate, each from one to five yards thick. I also examined wells which were of the same character. Deep and wide fissures were made in the low land near Silchar by the

earthquake of January, 1869, from which issued water, the temperature of which was 85°, having a sulphurous smell, also a mixture of sand and clay and ferruginous matter. Mr. Blandford (Superintendent Geological Survey of India) remarked upon this that "the smell of the water and the dark colour of the sand are most probably indications of decomposing organic matter, the presence of which would considerably raise the temperature, and in all probability the water and the sand are from a very moderate depth" (*vide* "Hunter's Statistics of Assam").

10. *Physical Characters of Cachar.—North of the Barak.*—The plain or habitable part of Cachar is surrounded on three sides by high mountains covered with a dense forest jungle, the tarai of which is very malarious, the inhabitants suffering much from intermittent and remittent fevers. The river Barak divides the plain into two parts, having very different physical characters. The country north of the Barak (between it and the mountains) is mostly in plateaux formed of boulders, gravel, sand, and very fine earth-mould, which affords excellent porous soil for the cultivation of tea. The plateaux rise from 50 to 250 feet above the flat, blue clay rice-fields which intervene, and their sides are often very steep. Nearly all this country between the Barak and the mountains is cultivable, there being few permanent swamps in the clay low land, and those not of great extent, compared with the country south of the Barak.

11. *South of the Barak.*—As swamps have long been supposed to be important factors in the causation of Anthrax, I make no apology for quoting the following graphic description from Hunter's "Statistical Account of Cachar":—

"Two large valleys lie to the south of the river Barak, divided by a range of hills running north and south. These valleys are for the most part under water during the rainy season, when they form extensive lakes and marshes. The western one is known as the Hailakandi Valley, the eastern one is the Chatla Fen, at the northern extremity of which is Silchar, the civil station of the district. . . . . It is difficult to give an estimate of the area under water during the rainy season, as it varies much from year to year, and it is not easy to determine where the actual *bil* begins and where the marsh jungle ends, but the dimensions of

the lake-like sheet of water in the Chatla Fen, during three or four months of the rainy season navigable by the boats which supply rice to the neighbouring tea plantations, may, however, be approximately stated to be about twelve miles in length, and two miles in breadth at the widest part.

(To be continued.)

THE DISEASES OF ELEPHANTS.

BY J. A. NUNN, ARMY VETERINARY DEPARTMENT, LAHORE, INDIA.

IN continuation of the series of articles on "The Literature of the Diseases of the Elephant," by Mr. J. H. Steel, A.V.D., that have appeared from time to time in the VETERINARY JOURNAL, I send the following few additional remarks, which may perhaps be of some use to any future investigator. They are gathered from the result of my own experience during my Indian service, but chiefly while over the frontier in Afghanistan. I regret that I have no notes to refer to, as at the time I did not think the matter of sufficient importance to make any, and it was only on reading Mr. Steel's articles that I became aware of the extreme scantiness of the literature of the subject; and on this account only I venture to intrude on your valuable space.

During the Afghan campaign of 1879-80, ten elephants were attached to the battery of artillery to which I then belonged. A constant source of trouble with them was "capped elbows." As is generally known to your readers who have served in the East, the elephant, when about to receive his load, is made to lie down by his "mahout" or driver. When in this position the fore-legs are stretched out in front of the body, with the elbows in contact with the ground. The "mahout" ought to place the "guddee," or thick wadded-cotton cloth that serves as a saddle for him to ride on the animal's neck, on the ground, under the elbows, before the animal lies down; but from carelessness this is frequently neglected, and owing to contact with the hard ground, a large tumour forms on the point of the elbow. If taken in time, and treated by fomentations and friction, these tumours

soon disappear, but in three or four cases that came under my observation, and which had been neglected, an obstinate ulcer formed, which rendered the animal almost useless for the time being, in consequence of the inability to lie down and receive his load.

I had to operate on one occasion on one of these elephants, for what—for want of a better term—I must describe as an ingrowing toe-nail. The outer nail of the left fore-foot had grown to a sharp point in an inward direction : that is to say, with a curve to the right, causing a deep, abraded wound on the left side of the second toe, and laming the elephant. The animal was made to lie down on the right side, by the "mahout," and the feet secured by the picketing chains. I then removed the offending nail with a carpenter's saw. I was astonished at the power of resistance that the nail offered to the instrument, giving the feeling of cutting through a thick piece of Indiarubber. The wound was dressed with "Cher Pine Oil," an impure oil of tar, which was the only thing I had available. The animal completely recovered, and marched down the Khyber on the evacuation of Afghanistan.

The "Cher Pine Oil" is, I believe, obtained from any of the pine family, but chiefly from the "deodar" pine. During the Afghan war, it was extensively used in the Transport Hospital, diluted with linseed oil, as a dressing for mange, which disease broke out extensively amongst the camels. As Mr. Steel remarks, the skin of the elephant is most sensitive, and I have found that the very greatest care is necessary in fitting the pads on which the load is carried ; the slightest gall, if neglected, becoming a most obstinate sore. In the case of an elephant that was returned to the Commissariat Department at Rawul Pindee, after the expedition in 1881, with a sore back about two feet in circumference, I applied a poultice which consisted of a flour sack filled with bran. The animal was moved from Rawul Pindee, but I heard that it eventually recovered.

NOTES ON HILL'S "BOVINE MEDICINE AND SURGERY."

BY A. E. MACGILLIVRAY, BANFF, N.B.

As this is rather an uncommonly well got-up publication, being quite a handsome addition to one's library, and besides is sent forth as "Text Book, Guide, and Book of Reference," it can only be expected by the author that the *material* "within the boards" will be scanned by critical eyes throughout his own profession, and no doubt the criticism will not invariably be favourable; such cannot be expected.

The author did well in dedicating the work to Mr. Fleming, as no one is more worthy of the honour, and besides no name is oftener quoted in its pages than that of *Fleming;* the dedication, therefore, could not well have gone elsewhere.

A great many foreign authorities are quoted—a practice becoming, if anything, just a little too common. A foreign opinion is quite acceptable, and often confirmatory, if not even decisive; but to refer everything to foreign opinion and decision is simply ridiculously unjust, and will no doubt work its own cure.

I have no objections to have foreign authorities quoted in favour of or against any professional communication from my pen, as I am quite able to take care of and speak for myself; but I have the utmost dislike and most serious objection, when I see a whole paragraph quoted *verbatim et literatim* from one of my own communications, and given as being from the pen of Professor Dammann, of the Hanover Veterinary School, *vide* page 542 of Hill's work. This is not only carelessly incorrect, but very unjust. The paragraph referred to will be found in my article on Tubercular Stomatitis in the VETERINARY JOURNAL for June, 1881, and was quoted by Mr. Fleming in his paper on *Diphtheria*, read before the Epidemiological Society, 31st May, 1881, and published in the VETERINARY JOURNAL for September, 1881. As a matter of course, Mr. Fleming acknowledges the proper origin of the said paragraph.

In these days when anything foreign is so highly valued, it is very hard to find one's own words put down as being from a foreign source, and a foreign professor's name tacked to them. No doubt we British veterinarians are only *pigmies* (I use a well-known Professor's designation), in comparison with our Continental *confrères*, as regards experimental research ; still, we must be excused for grumbling when our ideas are assigned point blank to a foreign source.

Our author's work is profusely illustrated, both plain and coloured, both original and copied. Plates 9, 10, 11, and 12, are coloured, and refer to what the author is pleased to call, "*Gangrenous Stomatitis, Cancrum oris, Tubercular Stomatitis*," and which he says, "arises from tuberculous diathesis." Further on, he speaks about its assuming a "diphtheritic type," with which latter he thinks the "disease is associated." This definition of the disease is sufficiently complicated—not to say much ; so much so that I am almost inclined to assert its utter impossibility. Why, we are told that this one phase of Stomatitis (he describes other two) is at once Gangrenous, Cancerous, Tubercular, and Diphtheritic! Gangrenous and Tubercular Stomatitis are very widely separated diseases ; and as for Diphtheritis, it has nothing (distinctly) in common with either. Plates 9 and 11 might be referable to Gangrenous, and Plates 10 and 12 to Tubercular Stomatitis ; but all convey but a very mild idea of either of these diseases.

One of the chief attractions of this work, *as advertised*, was, in my eyes, that it was accompanied "with an Appendix on the Practical Inspection of Meat," copiously illustrated with "woodcuts and coloured plates." But, alas ! seven poor woodcuts are all I can discover in this much-desired Appendix, and I feel bound to confess that the literary material in said Appendix is quite on a level with the illustrations.

Editorial.

THE VETERINARY SERVICE IN INDIA.

The position and prospects of veterinary medicine in our Indian Empire have been almost continually under discussion in this Journal, and a number of our readers who are more especially interested in the matter have fully expressed their views thereon. But the subject has hitherto been mainly discussed from a professional or personal point of view, and the great national or imperial interests which are concerned in it have only been lightly touched upon, or at most, treated superficially.

But, as will have been seen from the correspondence published in our last issue, an attempt has at last been made, and evidently with some success, to bring the subject, in all its importance, before the Secretary of State for India, and through him to influence the Viceroy of India to remove what must be considered a dark blot upon our Government of that great country.

It must be remembered that there is no veterinary organization in India—we believe there is not even one civilian veterinary surgeon employed by the Government; in that land, where animal plagues are rife and most destructive, and the losses caused by them are estimated at a minimum sum of six millions of pounds annually, there is not a single sanitary veterinary surgeon, nor yet the faintest attempt made to institute a service to suppress them. The only veterinary surgeons in India are those belonging to the army, and these are too few by one-half, even for their military duties, as is proved by the sickness and discontent prevailing among them. And yet when serious outbreaks of disease occur among cattle, they are detached from their regiments or corps, and sent to combat them as best they may; though only too frequently, from paucity of numbers, and absence of all sanitary regulations, their efforts are of little avail.

It is certainly astonishing, and very discreditable, that nothing should have been done to institute a veterinary sanitary service during the long time we have held India. That it is imperatively necessary such a service should be established—should have been established years ago—is perfectly obvious to all who know the havoc preventable diseases work in India, as the losses and inconvenience they cause form one of the chief reasons for the poverty-stricken condition of the agriculturists there. We do not at all agree with the arguments brought forward by those who assert that contagious diseases cannot be suppressed in India so readily as in this country, because of religious prejudices. No attempt has been made to deal with these diseases in a proper and methodical manner by the Government, and there can be no doubt whatever that when this is done, caste or religious prejudices will be overcome. To deal effectually with these scourges, a veterinary sanitary department should be formed; the three Presidencies should be mapped out into sanitary districts, to each of which a veterinary surgeon ought to be appointed; the function of each veterinary surgeon should be not only to suppress outbreaks of disease, but

to trace the origin of these outbreaks, to diffuse information with regard to them among the people who own animals, and so overcome prejudices with regard to their extinction, to establish improved methods of breeding, rearing, feeding, and utilising animals, and otherwise to assist in developing the resources of India—so far as the domesticated animals are concerned. Surely there is ample occupation here for two or three hundred skilled veterinarians! And we have no hesitation whatever in asserting that no department of the public service in India would confer greater benefit. The expense of maintaining it would be repaid a hundred-fold in a very short time, and the accusation directed against our government of India, that we have done nothing to eradicate the pestilential diseases of animals, or protect the people from their ravages, would soon have no foundation.

At present, veterinary surgeons may be said to be at a heavy discount in India. The army veterinary surgeons are over-worked, ill-paid, and their services ignored. The history of the campaign in Afghanistan, in so far as the treatment of the Army Veterinary Department goes, and the losses among, and horrible cruelty to, animals are concerned, is disheartening, appalling and disgraceful. And even the lessons that campaign should have taught seem to be thrown away, if we are to judge from what occurred in Egypt. With no fewer than six thousand animals embarked from India, the Indian Government only sent two veterinary surgeons! Not only this, but a regiment of Bengal Cavalry was shipped without a veterinary surgeon, or having its horses inspected, though Glanders had been prevalent among them; consequently, when it arrived in Egypt the disease was rife, and a troop, after losing a number of horses, had to be sent away altogether. There is no saying what injury this unpardonable neglect of the Indian Government, through its ignoring veterinary science, may have inflicted on the mounted corps sent from this country.

The Indian Government does its utmost, apparently, to dispense with the services of veterinary surgeons, and to disgust them. Such short-sighted policy is most unprofitable for India, and is every year working incalculable harm. The time has come when something should be done to remedy this unfortunate state of things, and the remedy should be powerful and effective. Nothing but disaster can be looked for from affairs as they exist at present.

CASTRATION-FEVER: CLINICAL OBSERVATIONS ON THE FEVER OF HORSES AFTER CASTRATION.*

BY EUGEN FRÖHNER.

WE rarely find anything in our text-books or periodicals relating to the fever which attends animals after operations. For instance, Hering, in his "Handbook of Veterinary Operations" (3rd edition, page 247), gives the following list of the consequences likely to follow emasculation:—Local

* Translated from the "Repertorium der Thierheilkunde." Jahrgang 43, Heft 4. By G. A. B.

wound reaction, adhesion of the lips of the wound, bleeding, abscess of the scrotum, intestinal and omental scrotal hernia, tetanus, protrusion of the spermatic cord, champignon, induration of the cord and fistulæ, entrance of air and peritonitis ; but no mention is made of the course, intensity, duration, etc., of "Wound-Fever." It is difficult, if not impossible, for the ordinary practitioner to undertake any close observations of the fever which supervenes upon the operations of castration he may be called upon to perform, although reports of such cases would be of considerable value. I have, therefore, endeavoured to put together the few facts I have collected upon this point in the following words. They are based upon observations of one hundred and ninety cases of castration in the clinic of the Munich Veterinary School.

We must first make ourselves acquainted with the method of performing the operation at this institution, as we shall have to revert to some of the methods of manipulation.

A tolerably large incision is made into the scrotum through the common integument and tunica-dartos, and the tunica vaginalis is exposed to view ; *the latter is then divided just sufficient to allow the testicle to be pressed through it.* Then a caustic clam is clasped as high up on the cord as possible, and there fixed. The testicle is now removed, by dividing the cord close to the clam at the posterior part, and about from one-half to one centimetre below the clam at the anterior part of the cord. After twenty-four hours the clam is removed by cutting the ligature on the end of the clam, freeing the clam from the cord, and then separating the latter from the margin of the wound ; the lips of the wound are then grasped by both hands and gently pulled downwards. During this manipulation the spermatic cord usually spontaneously recedes into the scrotum. Of the one hundred and ninety horses which were examined for febrile symptoms directly after castration, fifty-two showed no symptoms at all ; ninety-four presented slight symptoms ; in thirty-four cases the fever was tolerably high, the temperature being about 40° C. ; whilst in ten cases the fever was severe, the temperature registering 41° C. Thus we have the following percentage :—

Castration	without fever	27·4	per cent.
„	with slight signs of fever ...	49·4	„
„	with well-developed fever ...	17·9	„
„	with severe febrile symptoms	5·3	„
		100·0	per cent.

As a rule, there is a connection between the frequency of the heart's beats and the height of fever present. In the initial stage of the fever, however, the pulse is often normal, whilst the temperature is at its maximum.

The duration of "Castration-Fever" naturally depends upon its intensity. Thus, in those cases where slight signs of fever were present the duration was from three to five days ; in those cases in which the febrile symptoms were well developed it lasted from six to eight days, or even more, as many of these cases left the hospital before the fever had subsided. Those cases in which the fever was most intense continued the longest, viz., from ten to twelve days, and sometimes longer.

The fever usually commenced about twenty-four hours after the operation, *i.e.*, about the time the clams were removed. The temperature registered the highest on the evening of the same day, and gradually sank during the third and fourth days. At least, this is the case in the larger number of the slight cases.

The following table shows a typical case :—

Before castration	Evening, 6 o'clock	...	38·4° C.
	Morning, 8 „	...	38·2° „
The operation was performed at	10 „		
After the operation	Morning, 11 „	...	38·3° „
	Midday, 12 „	...	38·4° „
	Afternoon, 2 „	...	38·3° „
	„ 4 „	...	38·5° „
	„ 5 „	...	38·7° „
	Evening, 8 „	...	38·8° „
Second day, when the clams were removed	Morning	...	39·2° „
	Midday	...	39·4° „
	Evening	...	39·7° „
Third day after castration ...	Morning	...	39·0° „
	Midday	...	39·1° „
	Evening	...	39·2° „
Fourth day „ ...	Morning	...	38·4° „
	Midday	...	38·5° „
	Evening	...	38·8° „

From this table it will be seen that there was a slight rise of the temperature on the evening of the day the operation was performed. This must, however, be looked upon as very little when the normal evening increase of bodily heat is taken into consideration.

In a few cases the fever increased after it had begun to abate ; but it soon sank to the normal standard again. This occurrence seems to go *pari passu* with certain local wound processes, such as a fresh appearance of the swelling, retention of the discharges, and decomposition.

From these clinical data the following questions arise : What is the cause of these striking variations in the different groups of fever? How can we explain the presence of increased temperature (even up to 41·3° C.) without symptoms of fever being present? What are the causes of the fever after the operation of castration?

It is proved by the 27·4 per cent. above alluded to that castration is not necessarily followed by febrile symptoms, and when it does occur it is termed "Traumatic fever" (*Wundfieber*) ; and as the name implies, it is due to the local changes in the wound. This was the view propounded by Billroth.*

Richard Volkmann † and Alfred Genzmer divided Traumatic, or Wound Fever, into two different forms : 1. A SEPTIC form, produced by the influence of the air causing the wound to inflame, before granulation and suppuration have taken place ; also when pus undergoes certain changes in contact with the air, which are always accompanied with the development of decomposition bacteria. The nature of these changes is not yet sufficiently known, but they go under the collective designation of decomposition. The characteristic of this septic form is the presence of the general symptoms of poisoning, viz., mental depression, which sometimes extends to stupor, loss of power, and abatement of the digestive functions. In the ASCEPTIC form, on the contrary, all these phenomena are wanting ; the general health of the animal is not altered, and the bodily temperature is almost normal, and when it is slightly increased, it is the only clinical symptom of ill-health present.

If we do not take this opinion of Volkmann into consideration when studying Castration-Fever, it will be difficult to come to any definite conclusions from the isolated cases which come under our notice, since these

* Billroth, "Allgem. Chiurg. Pathologie und Therapie" 7 Aufl., p. 97.
† "Sammlung Klin. Vorträg. No. 121. 1878.

present such strikingly different phenomena. With regard to the general demeanour of animals affected with the septic form of "Castration-Fever," the depression of spirits and alteration of the digestive function are always accompanied by a distinct rise of the internal temperature, whilst in other cases the reaction is very slight indeed. The relation of asceptic to the septic form of the fever in the 190 operations mentioned, were as follows: The ninety-four cases in which slight febrile symptoms were present belonged to the *asceptic* form; the thirty-four cases of well-developed fever, and the ten severe cases, may be classed in the *septic* form, as shown in the accompanying percentage table:

Cases without febrile symptoms ...	...	27·4 per cent.
„ with *asceptic* form of fever ...	...	49·4 „
„ „ *septic* „ „ ...	...	23·2 „

From this it will be seen that the number of the *septic* fever cases were about the same as those in which no febrile symptoms were developed; and that the proportion of *asceptic* to *septic* forms of fever were as two to one.

Asceptic cases of fever	...	...	...	68·1 per cent.	
Septic „	„	...	...	...	31·9 „

The cases in which the fever took on the septic form were characterised by profuse swelling of the scrotum and sheath, which in some cases proceeded along the abdomen, and produced prolapsus of the penis. The intensity and extent of the swellings were in unison with the height of the fever; *i.e.*, as the swelling increased the temperature rose.

The differences of temperature in "Castration-Fever" are principally due to the different forms it assumes; or, in other words, the various causes which produce the fever. Now what are these? Volkmann says that the *asceptic* form is produced by the resorption of HOMOLOGOUS, degenerated, and changed products—products which are not different from those entering into the composition of the body, and which are the result of regressive physiological tissue metamorphosis, and change of matter. On the other hand, he attributes the *septic* form of the fever to absorption of HETEROLOGOUS, poisonous, and putrid matter, or to *septic* decomposition.

The most important question, however, for the practical veterinarian is, How can the septic form of castration-fever be prevented? and has the method of operating anything to do with producing it?

The best answer to this is, to operate as antiseptically as possible. As an experiment, I cleaned and disinfected the clams before applying them, but it did not prevent septic wound fever. Professor Bayer's* communication upon the point is interesting and instructive. He castrated fifteen horses by the antiseptic method (binding the part up in antiseptic bandages, etc.); four of them healed by the primary intention. In one of the cases which healed by the first intention, the temperature of the body rose to 40·2° C. on the fourth day. He also observed that the scrotum and sheath always swelled, even when union of the wound took place at once. Therefore it is patent that however strictly the antiseptic treatment is carried out, it will not always prevent "*septic fever*." Volkmann,† when speaking of treating wounds by the antiseptic method says, "We shall not be very far from the truth if we believe that out of 1,000 wounds properly treated, according to antiseptic principles, one-third will not be followed by febrile

* "Castration unter antiseptischen Cautelen." Adam's Wochenshrift, 1881. No. 46, p. 409.

† *L.c.* p. 5.

symptoms, one-third may show slight signs, whilst in the other third, the fever will be severe."

Perhaps the method of performing the operation has more to do with the production of the fever than the after treatment ; but nothing positive can be known upon this point until the results of the various methods be compared with each other. Prof. Dr. Vogel had the kindness to give me the results of his method, as follows :—Fever is usually very striking. I believe that a small opening in the scrotum and placing the clam too high on the cord, are injurious. Further, a small wound in the scrotum has the disadvantage of the edges uniting too quickly, and thereby prevents the purulent discharge from the sloughing end of the cord escaping, this being a frequent cause of fistulæ. It is also possible that the medicinal agents used on the clam may spread too far ; therefore, I have *lately discontinued to use any caustic agent at all, and the result has been far less swelling.* A clam with an iron ring and a smooth surface is just as effectual, and has the advantage of compressing the cord until it is little thicker than paper, and may be removed in a few hours. In many cases the clam is not *long enough*, so that the cord lies in the clam in folds ; consequently the pressure is uneven, and swelling is the result. This was also the reason why, in some of my earlier cases, I had slight hæmorrhages ; now, however, this never occurs. NONE OF MY OPERATIONS WERE FOLLOWED BY SEVERE WOUND FEVER."

From this we learn that Prof. Vogel is in favour of a *large opening through the scrotum*, and not placing the clam too high on the cord. In the latter point he differs from the majority of operators. With regard to caustic in the clam, Prof. Vogel used, I think, a solution of corrosive sublimate in gum, but I have used a solution in collodion, and have not seen any such bad results as are mentioned by Prof. Vogel. I did not observe any influence upon the intensity of the fever which supervened on the operation, although I took care not to allow the caustic to come in contact with the lips of the wound.

I am not sufficiently acquainted with the other methods of emasculating animals, to give any information with reference to the severity of the fever attending them. Further experiments and knowledge upon this point would be very desirable.

In conclusion, let me draw attention to another cause of increased temperature (fever). I have frequently observed that severe septic fever and swelling of the scrotum and sheath, were at certain times almost constant consequences of castration, whilst at other times it was not so. This I considered was due to some "stable miasma ;" a hypothesis which was strengthened by the fact that septic fever was especially prevalent whenever a neighbouring cesspool was nearly full, and required emptying. These cesspools are usually emptied twice a year (in spring and autumn). Therefore, as a prophylactic, these cesspools should be emptied some days before the operation is to be performed, and the animals housed as far as possible from them.

PHYSOSTIGMINUM : AN EXCELLENT REMEDY FOR COLIC, IMPACTION WITH FOOD, AND DYSPEPSIA.

BY PROF. W. DIECKERHOFF, BERLIN.*

FOR several years past two preparations of physostigminum (derived from Calabar bean), viz., the sulphate and salicylicate, have been employed

* Translated from Adam's "Wochenschrift für Thierheilkunde und Viehzucht," by W. F. Garside, Professor of Veterinary Science in the Royal Agricultural College, Cirencester.

externally as myotics. Up to the present, however, they have been but little used in the treatment of internal diseases. The special action which physostigminum exercises on the muscular tissue of the intestines induced me to give it a trial in Impaction, as well as in acute and chronic Dyspepsia.

No essential difference exists in the action of the two salts just mentioned. I used a crystallized sulphate, obtained from Gehe and Co., Dresden. A solution, injected subcutaneously, produced no inflammatory swelling at the point of introduction.

On introducing a watery solution (one-tenth per cent.) into the conjunctival sac, an hour elapsed before any contraction of the pupil took place; this contraction continued for twenty-four hours. No contraction followed the introduction of the solution into the system, either subcutaneously or directly into the veins. On the contrary, after large doses a considerable dilation of the pupil was observed.

If a solution be injected into the jugular, it operates much more quickly and powerfully then when a similar dose is injected subcutaneously. The method I adopted consisted in inserting a hollow needle into the compressed jugular vein, in an upward direction. The escape of blood from the needle indicates that it is within the vein. By means of an appropriate syringe, capable of holding about an ounce, the injection, provided the animal is quiet, is easily accomplished. A glass syringe is preferable. It should hold a quantity sufficient for one dose, so as to avoid the necessity for a second injection.

In about two or three minutes after a full dose of sulphate of physostigminum has been injected into the veins, its action is manifested, and the following symptoms exhibit themselves :—Uneasiness ; muscular twitchings, especially in the regions of the shoulders and quarters ; powerful contractions of the extensor muscles of the hind extremity ; slight colic ; outbreaks of perspiration ; respirations increased, and somewhat difficult, and sometimes even dyspnœa is present ; yawning ; slight insalivation ; in some cases the internal temperature is raised ; peristaltic action of the bowels increased for one or two hours ; intestinal murmurs heightened to such a degree as to be audible at a distance of several yards ; frequent fæcal evacuations and escape of gas per anus, the later evacuations being usually of a fluid consistence. Larger (poisonous) doses induce tetanic spasms of the extensor muscles of the hind extremity and the intestinal muscular coat ; heavy groaning, resulting from the abdominal pain ; weakness and transient relaxation of the sphincter ani.

A full dose injected subcutaneously causes, in twenty to forty minutes, somewhat similar symptoms, but less severe in character. No disturbance in the respiratory system or elevation of the temperature occurs.

Smaller doses vary somewhat in their action, the symptoms being by no means constant.

The action of the physostigminum extends to the whole of the intestinal tract. Appropriate doses being succeeded by no important after-results, this agent is particularly well adapted for the treatment of some of the most important intestinal and gastric diseases of horses and cattle. That physostigminum cannot relieve every case of Colic, and that it is incapable of arousing peristaltic action when Enteritis has succeeded Impaction, or when the muscular coat has lost its irritability, I need scarcely say.

The results of my experiments suggest the dose of the sulphate to be from 0·04 to 0·10 grammes (half to one-and-a-half grains), according to the size of the animal. A solution in distilled water (1-100), and the appropriate dose injected either subcutaneously or intravenous, I found to be the most useful. Generally speaking, I think veterinarians would do best to use the subcu-

taneous in preference to the intravenous method, on account of the somewhat severer symptoms which follow the latter. Large doses, I found, were much better tolerated when introduced beneath the skin. In dealing with very heavy horses, I think the dose I have given as maximal might be exceeded. Some animals seemed to bear much larger doses than others.

Where danger is threatened, direct introduction of the agent into the blood-stream is to be recommended.

The following cases are illustrative of the foregoing conclusions :—

No. 1. A glandered gelding, fourteen years of age, condemned to be shot ; appetite good, temp. 99·3° F., pulse 40, respirations 15. One-and-a-half grains of physostigminum sulphate dissolved in half an ounce of water, was injected into the right jugular. Two minutes later the respirations were increased and dyspnotic, expression anxious, head depressed, and flow of saliva from mouth. Five minutes after the injection, respirations 62, dyspnœa severe, nostrils being widely dilated, and heaving of the flanks, muscular twitchings over the surface of the whole body, which is maintained in a stiff position, with the head and neck extended. Seven minutes after the injection, evacuation of fæces, severe clonic contractions of the muscles of the quarter, great weakness, pupils not contracted, respirations 68 and dyspnotic, repeated attempts at vomition, two evacuations of fæces. Ten minutes after injection, respirations 64, repeated escape of intestinal gases. Three minutes later, five fæcal evacuations, anus paralysed so that the hand could easily be introduced into the rectum. Twenty minutes after the injection, respirations 52, pulse 35, amount of saliva decreasing, pupils dilated. Thirty minutes after injection, repeated evacuations of semi-solid fæces and gases, respirations 36, dyspnœa less severe, urine escapes in drops, flow of saliva has ceased. Thirty-five minutes after injection, fæces again passed. Forty minutes after injection, respirations 28, and again evacuation of excrement, pulse 32. The horse frequently lies down. The evacuations of fæces were several times repeated subsequent to this time. Three hours after the injection no further action of the agent was noticeable.

No. 2. A Belgian draught mare, aged eight years. Had been suffering for three hours from Colic, induced by overfeeding. Pain moderately severe, pulse 60, respirations 16, no intestinal murmurs. In this case I injected about a grain of the sulphate, dissolved in an ounce of distilled water, into the venous system. A few minutes later there was an anxious expression, respirations 42, pulse 60, twitchings of the abdominal and pelvic muscles. Fifteen minutes after the injection, flow of saliva, respirations dyspnotic and 44 to the minute, pulse 64, attempts at vomition, and escape of gases per anus. After twenty minutes, evacuations of dry fæces, intestinal murmurs distinctly heard on auscultation, pulse 66, respirations 38, and not difficult. Half-an-hour after the injection, frequent pawing with the fore feet, animal lies down frequently and groans, repeated evacuations of fæces and escape of gases. At the end of forty minutes horse somewhat quieter. Four minutes later dry fæces were evacuated, and the process repeated four minutes later. One hour after the injection the animal was perfectly quiet, the respirations being 36, and pulse 58. Repeated evacuations took place at intervals of a few minutes, and were continued for an hour. The animal took some food, and beyond a little weakness, appeared perfectly well two hours after the injection.

The details of two more examples are furnished by Professor Dieckerhoff, but the above will suffice to show the action of the medicine. He then proceeds :—Although I assured myself of the action of physostigminum in several other cases, the above will serve to indicate the value of this agent. No other is capable of exciting the intestinal peristaltic action with such certainty, celerity, or with so little danger to the animal. I consider it,

therefore, as especially applicable in cases of Colic arising from indigestion, whether acute or chronic.

It might probably prove equally efficacious in acute indigestion in cattle, but I have had no opportunity hitherto of testing it in these cases. The dose would probably require a little modification.

ON THE DEVELOPMENT OF THE LIVER-FLUKE (*Distomum hepaticum*).*

BY RUDOLPH LEUCKART.

THE history of the life and development of the *Distomum hepaticum* has occupied my attention for many long years. Very often have I renewed my attempts to infest the molluscs of this country, or at least the commonest among them, by means of the swimming embryos of the entozoon. But all my endeavours in this direction were fruitless until the midsummer of 1879, when I placed in my experimental basins a certain number of small lymnæa I found in the ponds in the Dresden Botanical Gardens, Rossmæssler having informed me that this locality furnished the *Lymnæus minutus* (*L. truncatulus*), a species I had not yet experimented with. To my joy and surprise, a few days afterwards I discovered that a portion of the molluscs were infested by the little parasites, which could be recognized with certainty by comparing them with the embryos swimming about in their vicinity.

They were found more especially at the bottom of the respiratory cavity, sometimes isolated, sometimes collected in large numbers, and they resembled little bladders with a well-defined contour, destitute of cilia, but with two ocular spots more or less distant from one another, with a small cephalic tongue; besides, they offered other characters which placed their origin beyond doubt. The contour of the sac was formed by transparent cells in process of active proliferation, and which were already, here and there, transformed into masses of larger cells.

I then thought that I might conclude that the embryos of the *Distomum hepaticum*, after their enkystment in the *L. minutus* were converted into sporocysts, which, on their part, produced new distomas. But if it seemed to me easy, at the commencement, to follow up the development of our parasite after its fixation, I soon had to change my opinion. The lymnæa which I had gathered were rapidly expended, and although more were sent to me at my urgent request, by Professor Drude, yet they only furnished me with very scanty materials for observation; the molluscs nearly all remained free from the parasites, though the conditions with regard to infection had not changed.

The year 1879 passed without my experiments having made any marked advance, and the following year was still less fruitful, as the materials for research, which I could only obtain in very small quantity, perished before the embryos were hatched. Nevertheless, I frequently had doubts as to the authenticity of the *L. minutus* I employed. In comparing them with the young of other species, I was led to recognize that I had to do with the *L. pereger*. But in my preceding researches I had many times experimented with this species in the adult, or at least in a very advanced stage of growth, but, as I have already said, unsuccessfully. I then remembered that it was chiefly the youngest specimens which were the hosts of the

* From the *Zoologischer Anzeiger*, December 12th, 1881, and *Archives de Zoologie Experimentale*, No. 2, 1882.

parasites in all my experiments, and it entered my mind that it might only be in the very juvenile molluscs that our *Distomum* found all the conditions necessary for its enkystment and metamorphoses, and that the development of the liver-fluke might be, like that of the *Cœnurus*, dependent on the youthfulness of the host.

This prevision was completely verified in the course of the present summer. Having renewed my experiments, I have been successful in infesting several hundreds of young *Lymnæa* (naturally the *L. pereger*), and to observe the development of the parasite.

The more juvenile the molluscs were, the more certain and complete was the infection. In specimens of the size of a pin's head, I have frequently found several dozens of embryos enkysted. The adult snails, or those about half-developed, are almost completely proof against invasion, and even among the larger of the young specimens there are many free from the parasites.

The other species of *Lymnæa* with which I have experimented (*L. palustris*, *L. auricularis*), comport themselves in the same manner. Now and again I have noticed—and particularly in the first-named species—traces of infection ; but enkystment rarely takes place, and development is arrested, while the parasites undergo degeneration—a circumstance frequently observed in the case of *L. pereger*.

It is not my intention, in this place, to give a complete *exposé* of my researches, nor to give a history of the development of the *Distomum hepaticum*, so far as I know it ; for my observations are not without gaps. This will be done presently ; but it may be interesting if I give in a brief manner the principal results.

The embryo of the *Distomum* on escaping from the ovum, already contains all its germinative cells. These occupy the posterior part of the body, while the anterior portion is filled by a granular mass, which there is every reason to regard as corresponding to a rudimentary intestine.

With respect to the germinative cells, they are probably of mesodermic origin. At the part where these cells and the granular mass touch, towards the limit of separation between the anterior and posterior moieties of the body, there is noticed in the deeper layer of the wall of the body, on the right and left sides, a vibratile funnel, which I have described in the supplement to the first volume of my work on parasites (1863, p. 766).

The epidermis is composed of some large cells, which are very regularly arranged in two rows in the posterior part of the body, and have numerous vibratile cilia. In fine, the structure of the embryos resemble in every respect, and in a very striking manner, that of the *Orthonectidæ* of Giard, a circumstance which renders it difficult to believe that these creatures are anything else than Trematodæ, which, beyond their condition of sexual maturity, have not been developed beyond the embryonic stage of the *Distoma*.

The changes which follow the enkystment of the embryos are at first manifested by an exfoliation of epidermic cells. As a consequence, the creatures lose their motility, and their shape alters ; they become contracted into an oval mass, and grow so rapidly that the ocular spot which was previously in the form of an X—a form which belongs to the deeper layers of the body, and which becomes more and more elongated—soon divides into two punctiform moieties. The mass of germinative cells in particular assumes an active part in this growth ; and it increases in such a manner that it quickly pushes away the rudimentary intestine and occupies the whole of the sac. The cells, themselves, enlarge, and several of them—especially in front—after dividing many times, are converted into a mass of cells of a notable volume, and which soon gives evidence of the first trace or streak of the future progeny.

But what is most astonishing is, that they are not young *Distoma* or *Cercaria* which are thus produced, but *Rediæ*, which so early as the second week are easily recognised, and soon after they are set free, one by one, in rupturing the maternal sac. In each sac the embryos are from five to eight in number. Their body is cylindrical in form, and as in the majority of species, they show at the commencement of the thin posterior extremity two dentiform prolongations directed towards the ventral aspect, and which serve as organs of locomotion, like two rudimentary feet. The cephalic sucker, which is connected with the middle of the body by a girdle-shaped thickening of the cuticle, is very motile, chiefly from the retractor muscles it contains, and which are attached to the cuticular girdle. The margins of the lips can be dilated so as to exercise a powerful degree of suction.

The internal organisation of the Rediæ resembles that of the embryos, except perhaps that the organs, and particularly the digestive apparatus, are more perfect. It is the same with the germinative cells which do not separate anywhere after, it might be said, the formation of the body, but originate at the same time as the other organs, and in an independent manner acquire the condition which they ultimately assume. They arise from the mesoderm, which is observed between the ectoderm and endoderm at a very early period, when the mass of cells therein is in the stage of epibolic gastrule.

Below the pharynx, the rediæ possess a bilobate gland, and in the wall of the body, a little in front of the rudimentary feet, a vibratile funnel on each side.

The germinative cells commence their evolution immediately after the rediæ are set free, and when the latter measure about 0·5. They probably produce a kind of tailless distomum, which does not swim about, but remains in the place where it has been born, and passes on to the mollusc, which nourishes it until it has attained its definitive stage of development. I say "probably," for up to the present time it has been impossible for me to follow these germinative cells to their complete development; as all the Lymnæa which I have succeeded in infesting throughout my experiments died in the course of the fourth week—that is to say, just at the period of development of the distoma.

To admit of the opinion that the creature which is derived from these Rediæ is a tailless distomum, I rely not only on the presence, in great quantity, of the liver-fluke in sheep and cattle, but also on the circumstance that with the *Lymnæus minutus* (and it is true also with regard to the adult specimens sent me by M. Clessin), I have found a Redia which evidently belonged to the same cycle as the liver-fluke, and which contained a tailless distomum.

This creature had already the rod-like covering of the adult animal, but naturally not so thick, and it also possessed the simple forked intestine which Joseph has observed in the young liver-fluke of the sheep.

If my presumptions are correct, they are therefore two small Lymnæa—*L. pereger* and *L. minutus*—which are the hosts of the liver-fluke: species which have a somewhat different distribution, but which much resemble each other by their frequency and mode of life. Unfortunately, I have not yet experimented with *L. minutus*, this species being completely absent from the neighbourhood of Leipzic, and as I intend to pursue my investigations, I terminate this communication in begging its readers to send me as many and as small *L. minutus* as possible—even those just hatched—in order to enable me to complete these researches, the importance of which are certainly of more than purely scientific interest.

THE DEMODEX FOLLICULORUM.

It is well known that the *Demodex folliculorum*, v. *hominis*, inhabits the follicles and sebaceous glands in the human skin, and particularly that of the nose, forehead, cheeks, and lips. It is often found in the small pimples or acne, so common in certain people, in the little masses of sebaceous material named Comedons. But Virchow states that their presence in these acne is purely accidental, and that in no way are they the determining cause of their formation. In every case they are seldom more than from two to four in each follicle, and have no effect on the general health of the individual.

The *Demodex* has also been found in the cutaneous follicles, and in the excretory ducts of the sebaceous and sudoriparous glands of various of the domesticated animals—such as the dog, cat, sheep, pig, and ox ; and they are more numerous, and multiply more rapidly, in animals than in mankind.

These parasites have attracted much attention from veterinarians at different times, but perhaps the most remarkable contribution made to our knowledge respecting them has been furnished by the Austrian veterinary surgeon, Czokor, in a treatise published some time ago, but which has not yet been noticed in this country.

Czokor gives the following characters of this family : *Body* vermiform, oval, or in shape like a laurel leaf, and attenuated at the posterior extremity ; *thorax* and *abdomen* not defined from each other ; *head* perfectly distinct from the thorax, and lyre or horse-shoe shaped.

The most notable of the members of this family is perhaps the *Demodex* of the pig, discovered by Czokor in 1878, and to which he has given the name of *Demodex phylloïdes suis*—a designation which conveys a good idea of its general aspect. This parasite produces in the pig a pustular and ulcerous affection of the skin, characterised by small tumours, the dimensions of which vary between those of a grain of sand and a small hazel nut. These tumours appear more especially on the nose, neck, inferior part of the chest, inside the arms, and on the belly and flank. They gradually increase in volume, and ultimately become large abscesses, in which, as in the tumours, the Demodex is found.

The following is Czokor's description of this particular parasite. The anterior portion of the head is constituted by two plates, which are the bases of the masticatory apparatus ; on this part are two salient points, the eyes ; at the inferior extremity of the two plates is an oval cavity—the pharynx, and to the right and left of this the excretory punctiform canal, from the glands of the head ; two mandibles joined at the anterior part of the head, which move actively in a horizontal direction, which resemble the blades of scissors, and which are as long as the head itself, though they are only visible on the dorsal surface ; two short layers of slightly flexuous chitine, pointed anteriorly and rounded posteriorly, which move horizontally during mastication, but which may unite to form a burrowing or suction apparatus,—these are the maxilla or jaws ; two tactile organs, tri-articulated, and fixed in the jaws in a way which allows them great mobility ; a single styloid buccal valve, with the oval pharynx depending from it. The integument, which is finely striated in the abdominal region, offers at the head, thorax, and feet very resistant chitinous thickening. The legs, eight in number, appear as short stumps, each composed of three parts ; the coxa or haunch, tibia or thigh, and tarsus. Each tarsus carries five chitinous pieces, a kind of claws which appear to be lodged in the soft parts, the external and internal being evidently only the continuation of the border of the tibia. On the middle of the lower face of the thorax is a line of chitine—the sternum. From the pharynx passes a short œsophagus which, provided with two openings, leads

to the stomach, situated in the thoracic cavity, and this again is continued by an intestinal canal which terminates by an anal opening situated immediately behind the end of the sternum. To all appearance there exists a tracheal system ; but as to vessels and nerves these have not yet been discovered, though of their presence there can be no doubt. The sexes are distinct, the male being always smaller than the female. Between the posterior extremity of the sternum and the anal opening is a kind of papilla, which represents the penis. In the body of the female is often observed a triangular body—this is the ovum, which is expelled by an opening situated behind the posterior extremity of the sternum. The ovum is fusiform in shape. The metamorphoses of the parasite comprise three periods : larval, hexapodal, and octopodal.

With regard to the characters of the other members of this group, the following are given by Zurn :—

Demodex folliculorum Hominis.—Male, 30 centimes of a millimetre long, 4 cm. broad. Female, up to 40 cm. long, and 5 cm. broad. Ovum cordiform or fusiform, from 8 cm. long, and 4 cm. broad. Larva hexapodal, 12 cm. long ; Octopodal larva, 36 cm. long ; head short and wide, its length and that of the thorax being equal to one-fourth of the total length of the body. This acarus was discovered in 1842 by G. Simon and Henle.

Demodex folliculorum Canis.—Male, from 22 cm. to 25 cm. long and 45 m. broad. Female, from 25 cm. to 30 cm. long, and 45 m. broad. Ovum fusiform or cordiform, from 7 cm. to 9 cm. long, and 25 m. broad. Larva hexapodal, and 11 cm. long ; octopodal larva, 19 cm. long. The length of the head and thorax is equal to one-third of the total length of the body. This acarus produces the follicular scabies of the dog, and was discovered by Tulk in 1844. Zurn has seen a veterinary surgeon, a coachman, and a woman, who, while attending on dogs affected with Follicular Scabies, had a pustular eruption on the hands and feet, and which was accompanied by a violent pruritis. On examination the Demodex was found in these pustules. He admits, however, that in order to contract the disease a special predisposition must be present ; as it has happened that healthy dogs have associated with diseased ones for a long time without being affected.

Demodex folliculorum Cati.—This was discovered by Mégnin and Leidy on the nose and in the ears of cats. It is one-fourth smaller than the *Demodex Canis.*

Demodex of the Sheep.—Oschatz has found in the Meibomian glands of the sheep a Demodex which is more especially distinguished from that of man by its larger size.

Demodex of the Ox.—This has been described by Faxon. Claus states that he has found the Demodex in the horse and fox, as well as in the ox.

TEXAS FEVER A MATTER OF NATIONAL IMPORTANCE.*

BY D. E. SALMON, D.V.M.

THERE is no infectious disease with which we should be better acquainted than with the so-called Texas or Spanish Fever of cattle. Its ravages have been known and its peculiarities have been a subject of comment in the Northern States for the past ninety years ; while it had existed in certain parts of the South for we know not how many centuries earlier. All the cattle taken to the infected districts of our Southern States to improve the

* From *The Chicago Breeder's Gazette.*

native herds, or to introduce new breeds, have been subject to this affection from time immemorial, and the few which have survived became inured to it, just as a certain proportion of the foreign population of Havana becomes inured to the Yellow Fever. With both of these diseases the immunity acquired in this way has been erroneously ascribed to acclimatization, while in reality it consists either in a natural insusceptibility to these affections, which a few individuals possess, or it is the result of a mild attack, which with these, as with other infectious maladies, protects against the peculiar virus in the future.

Even the beef cattle shipped from Tennessee and the mountains of the Carolinas, Georgia, and Alabama to certain market cities of the South, contract the plague in so short a time that it is nearly impossible, though it be winter, to get them slaughtered before the first symptoms appear; while the number of times which cattle from the South have infected the pastures of more northern latitudes, and destroyed the native stock upon them, has certainly been sufficient to demonstrate, to well informed-men, the dangerous qualities of such animals.

I state these facts, which are a matter of history, and of every-day observation in certain parts of our country, to recall the infinite importance of the subject and the necessity of our stock raisers having correct information, and of keeping it before them, in order that at least a part of the enormous losses may be arrested, which are now of annual occurrence. From time to time in the past, I have endeavoured to call attention to our true condition in regard to this disease, but the light-headed correspondents, not only of our agricultural journals, but of our great dailies, have been so industrious in the dissemination of their peculiar opinions—opinions arrived at by a sort of intuition, and at hundreds of miles from a case of the disease—that many have become sceptical in regard to the way in which the affection is transmitted, or even as to its existence. But the stock raiser in Missouri, Kansas or Indian Territory, who repeatedly and clearly traces his losses to crossing the trail of a Texas herd, or to pastures which such a herd has infected, has no such scepticism; nor had the farmers of the great States of Illinois, Indiana, Ohio, and Kentucky when, in 1867 and 1868, they saw not merely thousands, but tens of thousands, of their native cattle swept away by this pestilence.

The excitement which followed this destruction has long been forgotten, however, and the majority of our farmers have never even heard of Texas Fever; and so every year certain individuals of a speculative turn of mind invest in the cheap cattle of the South, and graze them immediately upon pastures which are also occupied with their native animals. When the heat of July and August has enabled the germs deposited upon the soil to multiply sufficiently, the susceptible native cattle are infected and die, and we are then told of a new and strange disease of the most remarkable virulence. This is the substantial history of hundreds of cases which have occurred, and are continually occurring in North Carolina, Virginia, West Virginia, and other States, and which have furnished the text for the many absurdities lately written, not only by the regular penny-a-liners, but, I am sorry to say, by those as well who claim to be veterinarians.

How important it is, then, that our farmers should accept the fact that in a vast section of our country—a section more than six times the size of England and Scotland combined, and two and a half times the size of France—we have a terribly fatal, indigenous cattle plague permanently located; and that all cattle taken to this district are liable to be infected, while those taken from it, though apparently unaffected themselves, are capable of carrying the germs to infect the pastures and roads on which they travel. This fact, so patent to every observing man, demonstrated over and over again so

many times, and now supported by hundreds and thousands of facts, is nevertheless contested by a majority of farmers, and even in districts where losses are annually occurring there is far from a unanimity of opinion. The losses are ascribed to ticks, to mushrooms, to peculiar characters of the vegetation, to acid in the soil, to something in the air, and, in fact, to anything and everything but the real cause, which there seems to be an extraordinary determination to overlook.

In the Northern and Western States it is not a difficult matter, as a rule, to trace the outbreaks of this disease to the introduction of Southern cattle; but along the border line of the infected district, where cattle are being continually driven, and where most of the roads and commons are infected, it is next to impossible to discover exactly how very many of the cases have originated. And it is just here, where it is doubly important for the people to have clear ideas of its origin and nature, that they utterly refuse in many cases to be convinced—that they will not take the necessary precautions to avoid it, and, as a result, suffer most disastrously.

If the losses from this stupidity were confined to those who ignore so plain a fact, we might be satisfied to allow the matter to rest; but, as I demonstrated in my report to the Department of Agriculture on this disease, the permanently infected district is being continually enlarged in this way—the border line is advancing farther and farther, and it seems to be only a question of time when our whole country will be infected. I say only a question of time, but it may be possible that our stock-owners can yet be roused to an appreciation of the dangers which threaten them, and that they will impress upon their representatives in Congress the necessity of national legislation for controlling such destructive pests. At present we seem to be in the remarkably absurd predicament that the States can make no effective laws, because this would be infringing upon the prerogative of the Federal Government, and Congress will do nothing, for fear of violating the rights of the States; so that, between the two, we are about as helpless as it is possible for a people to be.

It may be that in this respect I am assuming somewhat the character of an alarmist, but there are certain cases in which it is justifiable to sound an alarm. If the colonists of Australia and South Africa had realised what was in store for them by the introduction of Pleuro-pneumonia, would not they gladly have slaughtered the infected animals as soon as discovered, and placed sentries around every infected piece of ground? But they did not realise their danger, and the result was most disastrous to their leading industry; nor do we to-day, as a people, realise the losses that are continually occurring, and the much greater losses that must of necessity follow in the future from Pleuro-pneumonia and Texas Fever, if they are not checked. Any one who understands the nature of Pleuro-pneumonia could have predicted with absolute certainty the result of infecting the ranges of Australia and South Africa with the germs of this disease; and so the result of infecting our pastures with either Lung Plague or Texas Fever may be predicted at this time with the greatest confidence. It is not a question as to whether our people should be aroused and alarmed, but simply as to how this can be done in time to prevent the misfortune that is impending.

We have remained tranquil in the belief that the Texas Fever infection was only permanent in the malarial districts of our South Atlantic and gulf coasts, and that it could under no circumstances resist a heavy frost. But this is a deplorable mistake. Texas Fever and malaria have nothing in common—the infection has extended, and is now permanent in lands perfectly free from malaria; and not only does it resist a heavy frost, but it is not even exterminated by winters when the temperature sinks to zero, or even below.

I have written this to call attention to the importance of the disease; and when I have added that as the plague advances over a new district it not only destroys the greater part of the native cattle, but it makes the raising of these animals practically impossible for ten or twenty years, and that for ever afterwards the introduction of improved stock is attended with the most disheartening losses, the reader cannot fail to see that this importance is not exaggerated.

EXPERIMENTS WITH VACCIN CHARBONNEUX.

DR. KLEIN has made the following communication to the Veterinary Department of the Privy Council through the Local Government Board. "Vaccin charbonneux is to be obtained, and is announced to be obtainable (in the *Farmer*), from M. Bontroux, agent of M. Pasteur in Paris (applicants to M. Pasteur are referred to M. Bontroux), and, as I happen to know, it is brought over, and sold, and used to considerable quantities. The 'vaccin' is sold in tubes (each containing enough lymph for the inoculation of 100 sheep or fifty cattle) as 'Premier vaccin charbonneux' and as 'Deuxième vaccin charbonneux.' The 'premier vaccin,' according to the printed directions accompanying each lot, is inoculated first; after a lapse of twelve to fifteen days, the 'deuxième vaccin' is used in the same manner. The animals thus twice inoculated are supposed to enjoy immunity against fatal Anthrax. I have obtained, through two independent sources, two lots of this vaccin charbonneux (premier and deuxième), and have tested them by experiments.

"The results of these experiments enable me to say: (*a*) animals inoculated with this 'vaccin' (premier and deuxième) are not made immune against fatal Anthrax; and (*b*) both the first and second vaccin may produce fatal Anthrax.

"The following facts prove these propositions.

"1. *Experiments with Lot A.*—Inoculated with 'premier vaccin,' two sheep, two guinea-pigs, and two mice; no change in any animal. Inoculated with 'deuxième vaccin,' the two above sheep and the two above guinea-pigs. One of these sheep showed rise of temperature, and falling off in food for the first two days after this second inoculation, but was all right again after three days. The two guinea-pigs were dead of typical Anthrax within forty-eight hours. The four above mice were inoculated with the blood of one of these guinea-pigs; all four mice were dead of typical Anthrax within forty-eight hours. The two sheep, having been inoculated with the premier and deuxième vaccin, ought to have been immune against fatal Anthrax. Now see what happened; according to M. Pasteur, the *Bacillus anthracis* of blood of an animal dead of Anthrax, when cultivated at 42° to 43° Cent. for twelve days, loses all virulence, and becomes thereby converted into 'vaccin.' I had grown the *Bacillus anthracis* of blood of a guinea-pig dead of Anthrax, at a temperature of 42° to 43° Cent. for twenty-one days, and with this culture I inoculated the above two sheep. The result was that both animals were dead of typical Anthrax within forty-eight hours.

"2. *Experiments with Lot B.*—Inoculated with 'premier vaccin' four guinea-pigs and six mice. Within forty-eight hours, three of the guinea-pigs and three of the mice were dead of typical Anthrax. My method of using the fluids for inoculation absolutely precludes any accidental contamination, and hence these must be accepted as perfectly reliable. This country is comparatively free from Anthrax; and, therefore, the introduction and use of this so-called 'vaccin charbonneux' seems to me most dangerous, and capable of producing incalculable mischief."

We might point out that no satisfactory conclusion can be drawn from such limited experiments as the above. And it must be remembered that mice and guinea-pigs are not reliable animals for such experiments. Only those tests which we have alluded to as having been carried out in France, Germany, and Italy, on large numbers of cattle, sheep, and goats, under the supervision of scientific committees, are alone worthy of confidence, and it is to these we must look for a solution of the problem as to whether this protective inoculation for Anthrax offers all that Pasteur and others have claimed for it. It would be unfair in the extreme, if not foolish, to condemn this inoculation because of the results reported by Dr. Klein, seeing their fallaciousness. We can only regret that this country, the only one of nearly all the European nations, should be averse to carry out a sufficiently extensive and exhaustive series of experiments under proper direction, as if not here, at least in our colonies, there are such enormous losses annually from Anthrax. Experiments on two or three mice or guinea-pigs are certainly, so far as comparative pathology is concerned, a better index of the value our Government places on this subject than a *criterium* of our scientific good sense.

The fallacy of these experiments is exposed in the following observations on them by M. Pasteur :—

"I am much obliged to you for having informed me of the result of Dr. Klein's experiments on *vaccin charbonneux*. These experiments suggest to me the following reflections : The discovery of a means of producing modified virus, and the efficiency of the practical use of such virus in all matters relating to *vaccin charbonneux* have been so thoroughly proved, in various countries, for at least a year, that there is nothing more to be done, in the way of demonstration, to settle the question. It is an accomplished fact that now belongs to science.

"If any experimenter, however competent he may be, and I know that Dr. Klein is very able, fail when he attempts a fresh verification of the question, his duty, in the present condition of science, should be the investigation of the motives by which he is opposed. I have already pointed out that the question of species and race should be taken into consideration. A vaccine which vaccinates rabbits, vaccinates sheep very badly, or to a very small extent. Some breeds of sheep do not tolerate at all, or tolerate very badly, the vaccine which is efficient for another breed. It is advisable that preliminary trials should be made on a small number of individuals, especially if we pass from one country to another, so that we may be assured of the degree of strength of the vaccine ; and if it be desired also to find out what is suitable to new species or varieties, mice and guinea-pigs cannot be used for the trial of sheep-vaccine. There are also, in the kind of experiment under consideration, other sources of possible failure. Thus, I have already pointed out, that in one of the experiments undertaken in Italy, the virulent virus employed was septicæmic as well as anthracic. The vaccinated animals died as well as the non-vaccinated subjects.

"Dr. Klein has, as it appears to me, equally failed in proving that *vaccin charbonneux* loses its virulence when cultivated at 42° to 43° Cent., in contact with the air ; this is because he has not followed the method pointed out by me, and here also he can only blame himself for his failure. The conclusion of the communication to which I am now replying is prudent to the last degree, for it is certainly most unadvisable to introduce *vaccin charbonneux* into a country where Anthrax does not exist."

SURGICAL OPERATIONS ON HORSES.

(*From "Bell's Life."*)

THE new Act relating to veterinary practice will, in all probability, bring about great changes in country quarters, as in almost every parish has been a worthy individual called by the natives a horse doctor, but without any official qualification for that office. At the same time, hundreds of men have been very highly respected in their self-imposed calling, and for downright practical knowledge a great many of them could hardly be excelled. Many now living have had fifty years' daily experience amongst all sorts of cases, and, perhaps, less hampered than they might have been by medical rules, they have worked out the causes of diseases, and found cures for the same by actual practice. It was no wonder, then, that the law and the magnates of the Royal College of Veterinary Surgeons were indisposed to treat such practitioners harshly, though the necessities of the times demanded a special education for veterinary surgeons, and it was doing those who worked hard for the science an injury to allow uneducated men to share the fruits of study and investigation. Wisely was it considered, also, that a man possessing but a very moderate amount of book learning forty years ago might well occupy a different position to any one owning to such deficiencies at the present day. Respectability is now in a great measure decided by education, and there is no reason why a man who cannot attain to a required standard of knowledge should be allowed to fi l posts that are of great public importance. Considering all things, therefore, a limit of five years was quite on the side of leniency towards those not holding the veterinary diploma in future required, but the Act leaves all the old practitioners of above five years' practice in exactly the same position as they have always lived in, and they remain unhampered by any new rules or regulations.

The world is to see the end of them, however, as in another generation none but qualified practitioners, holding diplomas in the same way as in the higher branch of the medical profession, will be allowed to practise at all. No one can complain at this new order of things, as it must tend to raise the veterinary profession to a higher standard of importance, and it will serve also to sweep away a great many abuses that are still continued by the worst classes of local horse doctors, and by some of those possessing great experience, but too old to benefit by what they would call new-fangled ideas and experiments. At a future day none but those who have been enlightened by a due course of study and college training will be qualified to doctor and prescribe for our horses. It becomes, therefore, of more importance than ever to draw attention to those abuses that should be swept away before the new school get fairly settled to their work. Education must have a tendency to soften the heart towards the animal patient in this respect, and a well-trained mind must see that an animal which cannot tell us of all his pains and ailments, and cannot assist himself towards a recovery from any malady, demands even more thought than it is absolutely necessary to bestow on the human subject. Ignorance, or the absence of those special thoughts, may, and probably does, ruin a great number of horses every year, and it has often struck me that ill-shapen horses, shambling goers, and the victims of palpable disease, owe the whole of their misfortunes to some stupidly-devised operations. Firing, nerving, the removing of tumours, and more serious operations, often enough inflict as much injury on a horse by the way in which they are performed as if his ailments were allowed to remain untended. The old-fashioned style at a farm of calling the labourers together to cast the unfortunate patient on a

straw bed, or often enough on a field, with only the turf as a break, and with ropes fixed for the throw, and now pull together to bring the horse down with a crash or a thud sufficient to shake his limbs out of joint, is so very different from the hospital bed or table, with pillows and kind hands for support, and the powers of speech to say if this or that position hurts more or less. Do horses always get over those tremendous throws? and then the lengthened time they are often held down, and all for reasons for which the animal has no cognisance. Half the horse power of the country, at least, goes through this sort of thing, as required by the necessity of castration, and it strikes me very forcibly that a lot of horses are spoilt by that operation. We see horses going weak from the hind quarter, or with no growth of muscle in the thighs, and there is altogether an appearance that at some time or other a wasting process must have taken place which has altered the natural gait and formation of the animal in many points. To those who observe as closely as I am always doing, this view of a horse must have been by no means unfrequent, and those horses that look to be the commonest bred are those that are chiefly notable for the deficiencies I am alluding to. Thoroughbred horses are usually performed upon by skilled veterinary surgeons, and so are valuable hunting colts, but the ordinary country colts very frequently fall under the hands of those who still follow the old-fashioned plans of our forefathers. The wretched colt is not prepared at all for the operation, but the arrival of the horse doctor is the precursor of his being brought up from the field, and the farm hands are called together to assist in casting the colt. There is a lot of noise and bother about adjusting the ropes; Jack or Tom does not do it right, and the doctor sings out to them, the colt, in the meantime, being half-frightened to death, and, amidst his plunges and efforts to get away, and with his forelegs drawn up to his hind, a pull, a long pull, and a pull altogether, gives the poor young brute the biggest fall he has ever had in his life. Then the operation is performed, not over hastily, and somewhat roughly, according to the ideas of scientific veterinaries.

I have seen the operation performed in the rough and tumble way, and in a very scientific way. In the latter case the horse was thrown with the greatest care, and the operator had previously very closely examined the bed, and instructed the helpers, two of them being his own men, his straps being also of his own contrivance. A horse operated upon by this skilful hand I have seen driven in a gig nine days afterwards, but one roughly performed upon I have seen so miserably stiff at the end of three weeks as to be scarcely able to move, and with that crippled appearance of hind-quarter that denotes a probability to my eye of never recovering. He will get right according to ordinary notions, but his walk and all his paces will be cramped, or he will go wide from behind, or be what some people call split up, and years afterwards these detractions will be counted against his make and shape. According to my ideas an immense deal depends upon how this operation is performed, and I consider that owners of colts, for the sake of their own pockets, besides every proper idea of humanity, should consider this subject very deeply before selecting an operator. I have heard that the most skilful hand ever seen in this country was an American. A few years ago I know the operator I allude to performed upon several colts that belonged to a friend of mine, and I was told it was perfectly marvellous how he managed it all, as he never cast his patients, required very little assistance, and applied something that kept down all swelling and inflammation. Most of our own modern veterinary surgeons are, no doubt, skilful operators, and in this department of the profession I feel sure that science has gained many steps upon the old school of horse doctors, however practical the latter may have been in the discovery and treatment of ordinary diseases. The greatest improvement that I have noticed, however, has been the gradual adoption of chloroform by

several veterinary surgeons of my acquaintance in nearly all the operations they are called upon to perform. I am told by an excellent judge that a colt castrated under chloroform is convalescent five times as quickly as one performed upon in the ordinary way, no matter how skilful the operator may be, and that, in upwards of twenty cases, there has not been the smallest trace of mal-effect upon the animals. In such cases I am told it is not necessary to throw the colts, or to let them know that you are handling them at all, the colt being previously taught to come quietly in a halter, and stand still when required. By such a method nearly all shock to the system is avoided, and this is the danger that I maintain is so great in being likely to permanently injure a horse. Do away with the rough handling, and keep the animal from the knowledge that something very hurtful has been done to him by his worst enemy, man, and there can be nothing to fear as to his deteriorating in his natural shape and make. Then why should not the use of chloroform become general for all the operations it may be found necessary to perform upon horses? There can be no objection urged against the expediency of using chloroform on the same plea to be advanced in the case of the human subject, that the administration may be dangerous to life, as, taking the scanty proportions of such accidents in the hands of the faculty, estimated at not one in five hundred, the loss of a horse against the great increase of value of the many safely accounted for, would be of the smallest consideration. At the same time, I do not believe that there would be any danger at all as regards horses, as the evidence of medical men would show that patients unfitted for the administration of chloroform are those having an unusually weak action of the heart. Now, considering the enormous efforts of which horses are capable, it would appear very evident that the action of the heart was more powerful in the horse than in almost any living creature, and that for that reason he should be the best subject of all others for chloroform.

I am told by experienced veterinary surgeons that it is much easier to perform upon a horse under chloroform than when he is under the influence of fright and suffering, and the operation mentioned was nerving, which could be done with the greatest nicety in the interval of insensibility. I should like to see what may be the new era of the veterinary profession, as marked from the present year, when those who commence to practise must do so under a diploma, equally marked by the universal use of chloroform, to lessen the sufferings of animals under veterinary treatment. I bring forward the suggestion as regards horses, because I think thousands will be more fitted for general use by the adoption of such an assistant in necessary operations, and I plead on the score of humanity for animals that cannot speak to us to tell us how they suffer for our service, and do not understand that the treatment to which we put them may be for their ultimate benefit.

GENERAL SIR F. FITZWYGRAM'S VETERINARY PRIZES, 1883.

THE next examination for the Veterinary Prizes given by Sir F. Fitzwygram, will take place in London, at the R.C.V.S., 10, Red Lion Square, and in Edinburgh (by the kind consent of the Directors) at the chambers of the Highland and Agricultural Society, George IV. Bridge, at 10 a.m. on second Wednesday in May, 1883.

These prizes are open to members of the R.C.V.S. who have obtained their diploma since the last examination, and who have passed with "Great" or "Very Great Credit." The examination will be both written and practical. Marks will be assigned to written answers as under:—Physiology,

300 ; pathology, 300 ; anatomy, 300. Three hours will be allowed for each of the above subjects. Sixty per cent. of marks must be obtained in each subject.

The five best candidates, having qualified as above, will be allowed to proceed to the *practical* examination.

Six hundred marks will be assigned to horse practice, and 600 marks to cattle. Two hours will be allowed for the examination of each candidate in horse, and two hours for examination in cattle practice. A candidate failing to obtain sixty per cent. marks in horse practice, or forty per cent. in cattle practice, will be disqualified.

The practical examination will be held at such place, and at such times as may suit the examiners and the majority of the candidates. The prizes are —1st, £50 ; 2nd, £30 ; 3rd, £20. Actual travelling and hotel expenses, not exceeding £5, will be allowed to each of the five selected candidates. The names of the intending competitors must be sent to the Secretary, R.C.V.S., four days before the date of the examination.

Memorandum.

The examination papers, with number cards, and blank sheets or books for the competitors to write upon, will be forwarded under cover to the superintendents or other appointed persons, so as to be received by them as near the day fixed for examination as possible.

Writing materials for each competitor will be provided, and all arrangements for the accommodation of the competitors completed, before the hour fixed for opening the envelope containing the questions.

Competitors should be in their places at the time appointed : no extra time will be allowed to competitors who come in late ; they will, however, be allowed to take their place if they come in *before* any one has left the room.

Further information can be obtained from the Secretary, R.C.V.S., 10, Red Lion Square, W.C.

Aldershot ; *September*, 1882.

Proceedings of Veterinary Medical Societies, &c.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE twelfth annual meeting of this society was held on the 5th October at 10, Red Lion Square.

Mr. J. Woodger was re-elected president, and the vice-presidents chosen were Messrs. Fleming, Axe, Rowe, and Shaw. Nine ordinary meetings have been held during the session, with a good attendance of Fellows, and the following subjects have been brought under debate :—

1. Some of the Diseases of the Brain Affecting the Horse. (Essay by H. J. Hancock.)
2. Infection and Influenza. (Essay by A. Broad.)
3. Uses of Hot and Cold Water in Veterinary Practice. (Essay by W. Hunting.)
4. Laryngismus Paralyticus. (Essay by C. Sheather.)
5. Rabies, a discussion. The subject being introduced by Mr. Fleming.

The following were the most important among the pathological specimens shown :—

Osseous Nasal Polypus, Urinary Calculi, Vesical Calculus, in which a large piece of stick was imbedded, Fractured Pelvis, Lungs of a Duck

(Gregarinosis), Malformation of Head (horse), Tumour in Colon, Irregular Substances in Horse's Heart, Nasal Polypus (pig), Foreign Bodies in Dogs' Stomachs, Cerebral Tumours (horse), Specimens illustrating a Serious Disorder affecting Fowls.

From the essays already promised, and the interest shown by the Fellows a very satisfactory session is anticipated.

IRISH CENTRAL VETERINARY MEDICAL SOCIETY.

THE third regular meeting of the above Society was held at the Grosvenor Hotel, Dublin, on the 31st day of August, 1882. Present:—Messrs. T. D. Lambert, President; J. Malcolm, T. H. Simcocks, and A. G. Ross, Vice-Presidents; L. Hunter, P. A. Lawlor, J. Freeman, A. J. Kelly, I. J. Sperring, Dublin. Messrs. J. Preston, Mallow; John Bell, Clonmel; W. Pallin, Curragh Camp; T. H. Prior, Parsonstown; J. D. Lambert, Army Veterinary Department. Visitors: Messrs. Alex. Lawson, Manchester; S. Lambert, Dr. Prior, Parsonstown; R. Kernaghan, Ballymena; Clancy, veterinary student; Robinson, Greenock.

The minutes of the last meeting were read and signed. Letters of apology were read from Messrs. Jas. Ashe, Hedley, Muir, and Miller for non-attendance.

A letter from Mr. Banham, of Cambridge, as to the proposed British National Veterinary Association, was read by the Secretary; and Messrs. T. D. Lambert, President, and Mr. John Malcolm, Vice-President, were unanimously elected as representatives of the Society in that behalf.

A circular letter from Mr. J. B. Martin, of Rochester, as to the proposed "Fleming Testimonial," was read, and on the motion of Mr. T. H. Simcocks, seconded by Mr. P. A. Lawlor, it was resolved that a subscription of five guineas should be given on behalf of this Society, as a testimony of the esteem of the members for Mr. Fleming, and their appreciation of the brilliant talent and indefatigable energy of that gentleman in the cause of our science.

The question of holding the meetings in an hotel was again introduced for discussion, and it was ultimately—on the motion of Mr. John Malcolm, seconded by Mr. W. Pallin—resolved that the Secretary be instructed to apply to the Royal Dublin Society for permission to use a room for the purposes of holding the quarterly meetings of this Society.

Mr. JOHN BELL proposed the name of Mr. J. Peard, of Cork, which was seconded by Mr. W. PALLIN. The ballot for this gentleman to take place next meeting.

Mr. T. H. SIMCOCKS moved: "That in the opinion of the members of this Society, the examining Board of the Royal College of Veterinary Surgeons should be exclusively composed of members of the veterinary profession; that we pledge ourselves to support any measure which may be brought forward for the attainment of this object; and that the Secretary be requested to forward a copy of this resolution to the Secretary of the Royal College of Veterinary Surgeons."

This was seconded by Mr. W. PALLIN; who expressed—in common with all the members who took part in the discussion—his belief in the desirability of veterinary students being examined entirely by veterinary surgeons. It was the opinion of all the members present, that although the co-ordination of the medical with the veterinary profession was desirable in many ways, yet that our students should be examined by members of the medical faculty was an anomaly which reflected but small credit on us as a profession, and that until it was removed we should fail to command that respect which the

profession would obtain by examining its own students. The resolution was carried unanimously and with acclamation.

The SECRETARY read a letter from Mr. George Fleming, honorary associate of the Society (who had previously intimated his intention of being present, and introducing a paper, at this meeting), expressing his regret that the state of his health compelled him to go abroad for a short time, and that he would consequently be unable to be present, but at some future meeting he would endeavour to fulfil his promise.

The PRESIDENT then called upon Mr. T. H. Simcocks, of Drogheda, to read his paper on "Castration."

He read as follows:—Gentlemen,—In choosing for the subject of my paper "Castration in the Horse," I feel that I have selected a topic which, though I trust may lead to some useful discussion, does not admit of much originality of treatment on my part, but the practical importance of the matter deserves our consideration.

By the term "Castration," we describe a surgical operation which has for its object the deprivation of an animal of the faculty of reproduction, either by destroying the functions of the essential organs of generation or by entirely removing those organs, which in the male are the testicles.

This operation, which is a very ancient one, is practised on all animals, even man himself, but for the purposes of this paper I intend to confine my observations to the equine species.

Castration was commonly performed on their horses by the ancient Egyptians and Jews, and we even find mention made of this operation in the "Pentateuch," while Aristotle speak of its being known in Greece 400 years before Christ, and amongst the pagan Romans, and in Eastern nations it was also practised; so of its antiquity and universality there can be no doubt.

It is a singular fact in the history of castration that for a long time the operation was confined to a class of men, for the most part ignorant in the extreme, who by long practice had acquired considerable skill in the performance of this operation, and even now in not a few instances the services of the unqualified cutter are preferred to those of the supposed to be skilled M.R.C.V.S., a circumstance which I think is to be accounted for by the fact that most of these "gelders" seem to have a natural aptitude, increased by lengthened experience in the handling of unbroken colts, while too frequently the young veterinary surgeon, destitute of practical knowledge, cuts such a figure in his preliminary manipulations that people begin to think, that though he may be able to treat disease, in this operation the "lucky man" is more to be depended upon; and I must certainly say that in my experience I have found that the mortality after castration is less amongst those animals which have been castrated by empirics than those which have been operated on by veterinary surgeons.

The operation of castration in the horse may be said to be one either of necessity or convenience, according to the indications it is called to answer.

Thus, castration is a necessity when it is performed for the purpose of removing certain diseases of the testicles or neighbouring organs, such as Sarcocele, Hydrocele, Abscess of the epididymis, Hernia, etc., or when it is performed for the purpose of improving the temper of a dangerous or cowardly animal.

The operation is one of convenience when it is put in practice with the design of modifying the animal organism, and better fitting it for the exigencies of domesticity. Castration quickly effects marked changes in the character, form, and nutritive functions of those subjects submitted to its effects. The gelding, more especially if the operation has been performed at an early

age, somewhat resembles the female in external conformation, and that the character is very materially altered is certain from the fact that emasculation will frequently convert a sour and savage animal into a good-tempered, generous race-horse. This is well-known to practical men, and the extraordinary improvement effected in the disposition of a horse by the removal of the testicles is frequently proved on our race-courses, when some gelding, which when entire was remarkable for ill-temper and cowardice, gamely struggles home after a severe race, answering every call of his jockey, and enduring severe punishment without flinching.

That castration modifies the nutritive functions is evidenced by the difference we may observe between the flesh of the bull and that of the ox. It favours the development of the cellular and adipose tissues, and though these changes are not so evident in a horse as in some other animals there is no doubt but they occur to a certain extent.

Before proceeding to discuss the various methods of castration it is necessary to be acquainted with the anatomy of the parts involved in the operation, and though you are of course all familiar with it, I will venture to occupy a few minutes in a short description of the testicles, their annexes and envelopes.

The scrotum, situated in the inguinal region, forms a sac divided into two parts by a raphe prolonged from the perineal region. On dissection we find that the scrotum consists of five layers, superposed as follows, viz., the skin, the dartos, an aponuretic layer, the cremaster, the tunica fibrosa vaginalis.

The skin is very thin and covered with fine hairs, and immediately beneath it is the dartos, which is formed of a mixture of organic muscular tissue and elastic fibres, and it contracts under the influence of cold, drawing the scrotum more into the inguinal region; the fibro-cellular layer is very thin, and consists of fibres of the *obliquus internus* prolonged from the lower inguinal ring; the cremaster is a bundle of red muscular fibres which extend from the iliac fascia through the inguinal canal, and is attached to the external face of the tunica fibrosa proper. Though usually described as one of the coverings of the testicle, the cremaster hardly deserves to be so called; the tunica fibrosa proper is derived from the fascia transversalis; it envelopes the testicle and gives off a reflection which closely surrounds that organ, and is known as the tunica vaginalis testis.

The testicle is an organ of oval form. It is free at the bottom of the inguinal canal, but its movement is restricted by its attachment by a peritoneal bond to the posterior border of the canal. At the superior border of the testicle is a sort of vermiform body, known as the epididymis, from which the vas deferens proceeds; the veins of the testicle unite to form two or three tracts, which proceed upwards. The artery, which is derived from the posterior aorta, proceeds downwards in a flexuous course at the anterior part of the cord.

We will now proceed to consider the best age at which to practise the operation, the general and particular conditions most favourable for its execution, and, finally, the manner in which it is safest and most convenient to cast and secure the animal. The horse may be emasculated at almost all periods of his life, from a few days after he is born up to twenty years or more; but the operation is easy to execute and less dangerous in the youthful than the aged animal, and in my opinion no rule can be laid down, as each case should be considered on its merits, the stage of development, shape, breed, and purpose for which the animal is intended being taken into consideration. Speaking generally, I believe that horses intended for light harness or saddle work should be castrated at an earlier period than those intended for heavy draught, but even here we ought to look to the shape and development of the individual. If the forehand is

light, the postponement of the operation for some months will be attended with benefit, and if the animal is ill-developed, delay will also be useful. Youatt advises that horses intended for light work should be operated on when four or five months old ; those of heavier breeds at a year. There can be little doubt but that the danger of the operation is in inverse ratio to the age ; the younger the animal the less the risk ; but in my practice I am most frequently called upon to castrate yearlings and one-and-a-half-year olds, and these ages I consider as generally suitable as any.

It is perhaps because castration is so very commonly done by veterinary surgeons, that proper precautions are not always observed in inquiring into the conditions under which it is to be performed ; and though the reckless practitioner, who is prepared "to cut" a horse at any time, in any weather, and under any circumstances, may succeed in some cases, in some his want of precaution will pretty surely end in the death of his patient.

Before proceeding to operate, the practitioner should take into consideration the state of health of the animal, its freedom from Hernia and other local diseases, the season of the year, the temperature, and the sanitary surroundings.

The best seasons for operating are spring and autumn, while the temperature is moderate. Frosty nights and easterly winds should be avoided. I find that in animals castrated in winter, the wounds heal slowly, and the condition remains poor for a long time, while in those subjects which are operated upon in summer, there is a tendency to gangrene in the wounds, and the flies are also troublesome.

We should if possible avoid operating at a time when Influenza prevails amongst horses, for even if our patient appears in perfect health, it seems to me that the particular state of atmosphere which exists during the prevalence of this enzootic disease, is unfavourable to the recovery of the animal. It is hardly necessary to say that the animal about to be castrated should be in perfect health and fair condition. We should be careful to avoid operating on a horse which is suffering or recovering from Strangles, for I have found that under such circumstances fatal results not unfrequently ensue, or at best enormous swelling of the sheath, phlegmonous abscess of the cord, and great debility result. It is necessary that the instruments and hands should be quite clean, and free from septic germs. I am convinced that want of care in this respect is not unfrequently the cause of Peritonitis and Septicæmia, and if the operator has been engaged in a *post mortem* or particular case, he should allow some days to elapse before castrating. It is also well to see that the casting bed is clean ; it is a too common practice to cast horses on a dung heap, and I attribute the death of at least one animal which occurred with me to this fact ; and some observations made by Mr. Tedbar Hopkins in a paper on "Antisepticity" some time since read by him, go to show the caution which ought to be observed on these points.

Some authors advise a prolonged course of low diet previous to the operation, but this I think is a mistake. If the animal is very fat, a dose or two of physic and a diminished diet may be required for a time, but as a rule, instead of starving colts about to be cut, it will be found useful to allow them a moderate quantity of oats for a week or two prior to the operation, and in case of older horses, in fair hard-fed condition, no particular change of dietary is necessary. Of course colts should be removed from grass at least twelve hours before being thrown down, and horses in stable should be kept fasting for the same period.

The colt having been haltered, a proceeding which should be accomplished as quietly as possible, the cord at one end of a short-handled twitch should be placed on his upper lip, and the other end secured to the halter ; this,

which is Farmer Miles' plan, is better than the usual long stick held by an attendant, as no matter how the animal struggles, the lip is kept tightly compressed without danger to any one. The twitch being thus applied, the operator should cautiously examine the animal, and ascertain if Hernia be present. Having done so, if he decides to proceed, the next step is to cast and secure the animal, and how best to do this is a matter on which a difference of opinion exists. For my own part I invariably use the ordinary patent screw hobbles, and throw the animal on its left side, and when down I put on the cross hobble, on the uppermost limbs, and then, after removing the right hind leg from the hobble by means of a rope passed under the neck, I secure it with the foot near the front of the shoulder, thus exposing the scrotum. I have cast some hundreds of unbroken colts in this way, and I never yet had an accident, and though some of them were very troublesome, I never met one on which it was impossible to secure the hobbles. Some practitioners use a rope made into a noose, which is placed round the neck ; the long ends are now run down between the fore legs, and an end having been placed round each hind limb, either above the hock or in the heel, the rope is again passed through the noose, and the animal pulled into a sitting position, rolled over, tail up, and placed on its back. I dislike this method, as I have known of many accidents occurring when it has been put in practice, and the use of a cart rope is unprofessional-looking, though this objection may be met by using Arnold's patent casting hobbles.

Farmer Miles, who, some years ago, came amongst us as a specialist in the art of castration, secures his patient in a highly complex manner. I only saw him cast one horse, and I must say his mode of procedure is not one which I would be inclined to imitate, and I cannot understand how he would be able to get the multifarious ropes he employs on a vicious or unbroken animal. In his method he uses five rope hobbles, with metal D's, two ropes passing from a loop round the neck, a rope for drawing the legs together, a smaller cord for tying the hind legs to each other, and, finally, a "back rope" for keeping the tackle in its place when the animal is down. To throw the horse he first places a looped rope around his neck, the ends of which are then passed between the fore and hind legs, and brought round on the outside, and again through the loop. He then (if the horse is to be thrown on the right side) puts on a hobble, to which a rope is secured on the near fore leg; rope-hobbles with D's are then placed on the other three limbs, and the rope carried through them as usual; having passed through the D on the near hind limb, the rope is passed over to the off fore limb, where it is run through the D of the fifth hobble, placed above the fetlock; the hind legs are then tied together, and the assistants, exercising their strength, the animal of course falls, and is secured by a series of complicated knots ; a spreader is now placed between the hind legs to keep them apart, and the preparations are complete. I must confess that personally I do not admire Farmer Miles' system of throwing a horse ; his hobbles, in my opinion, are too complicated and troublesome, and with the exception of the use of the spreader I fail to see what improvement there is in his plan.

In cases in which the horse is very vicious, I have found it useful to place over his eyes a leather blind, made for the purpose. With colts, in particular, this is most effectual, and in cases of emergency a sack or coat may be thus utilised.

There are several different modes of performing the operation of castration. Probably, the most ancient is by simple excision, the actual cautery, or by crushing ; subsequently, the ligature and clams came into fashion, and now, in addition to these methods, the operation is performed by scraping, by torsion, by the ecraseur, and by bistournage.

To perform the operation with the clams, the instruments necessary are

a sharp, convex-edged knife, two pair of clams, a key for securing them, and some waxed thread. Into a lengthened description of these instruments I need not enter, as you are doubtless all familiar with them.

Castration by the clams may be effected in two ways, either with the testicle uncovered, the old method, or covered—the new proceeding, the essential difference between which consists in the fact that in the last case the fibro-serous tunic is included in the clams.

In order to perform the uncovered operation, which is most commonly practised, the animal should be secured on its left side, and the instrument being placed at hand, the operator places himself at the animal's croup, the knee against the quarter, and proceeds as follows :—

He begins by seizing the testicle which is in the lowest portion, or, if one organ is very much smaller than the other it should be removed first, as the scrotum becomes slippery from the effused blood, and not unfrequently after the removal of the first testis, the patient, by contracting the cremaster, renders it difficult to secure the second. The operator, having decided which organ he will first remove, should grasp it quickly and firmly with the right hand, and he should then take hold of the cord with the left, and by pressing the testicle in an upward direction render the scrotum tense. Sometimes the smallness of the organs, the shortness of the spermatic cords, or the vigorous contractions of the cremaster, render this part of the proceeding difficult, and in such case, both hands should be placed in the inguinal region, so as to make levers of the thumbs and fingers ; if the cremaster remains contracted, it will be well to divert the animal's attention by tapping him on the nose or some such means, and Bouley recommends that if the spasm persists, chloroform should be administered, but I have never had occasion to use it. The scrotum being, as I have said, rendered tense, a bold incision is to be made down on the testicle, when the gland pops out, unless abnormal adhesions should exist, in which case they ought to be torn through with the nail or the back of the knife. The operator should now take the testicle in his right hand, and should with the left fingers completely separate the tissues for some distance up the cord, so that the organ may be entirely disengaged. The testicle being thus isolated, the clams are to be applied above the epididymis, tightened by means of the key, and secured by the waxed thread. In performing the covered operation the incision must be cautiously made through the skin, dartos, and aponuretic layer ; the tunica vaginalis testis should now be carefully dissected back above the epididymis, and the clams applied as before.

The clams must be removed some time after the operation. Some practitioners let them remain on for twenty-four or forty-eight hours, and a few even for three or four days ; but, except in cases where the covered operation has to be performed for Hernia, forty-eight hours will be found sufficient. To remove them, a twitch must be placed on the animal's upper lip, a side line applied if necessary, and the fore limb being held up, the operator, with a scissors, should remove all the dead tissue beneath the clams. He should then cut the waxed thread with the scissors or a small straight bistoury, and separating the clams with his fingers, they drop off. The eschar which has formed between the clams should not be removed, lest hæmorrhage should occur ; but with the finger he should separate all adhesions which may have formed between the cord and the scrotum. Many castrators use some caustic paste in the clams. I consider it unnecessary, as I have found that the pressure produced by the clams is sufficient to produce complete strangulation of the cord.

By simple excision we describe a mode of castration which consists in the division of the spermatic cord by a sharp cutting instrument, without the employment of any artificial means to arrest the consequent hæmorrhage.

This method is seldom practised here, but on the Continent La Fosse has recommended it and performed it with success; but I imagine that few of us will be found here to incur the responsibilities of an accident which may follow this style of operation. To perform it the animal may be cast or he may be secured standing by means of a side line and Rarey strap. A longitudinal incision is then made in the scrotum, right down to the testicle, which is then seized, and by a cut of the bistoury the cord is to be divided transversely above the epididymis. The cord, owing to its natural retractility, is drawn up into the inguinal canal. The other testicle being removed in like manner, the animal is placed in his stable and kept quiet for two or three days.

The immediate effect of this operation is a profuse hæmorrhage, which continues for some time, but usually ceases spontaneously. The quantity and duration of this bleeding varies according to a variety of circumstances, such as the age of the animal, its condition, the size of the arteries, the vital retractility of the vessels, and the repose observed by the patient after the operation. Another cause which influences the quantity of blood lost is the size of the wound in the scrotum, as the accumulation of blood in the inguinal canal, where the coagulum forms, is a direct obstacle to the emission of that fluid, and the smaller the external opening the sooner this clot will form. For myself, I cannot advise this method. I have twice put it in practice, and though the cases ended well, the bleeding rather alarmed me; but La Fosse, Barthelemy, and other French veterinarians have practised this operation with success, and it is worthy of remark that they state that the weak and debilitated animals lose most blood.

By Scraping.—This is a mode of castration which seems to be of Indian origin. It consists in the division of the spermatic cord by scraping it with a blunt-edged knife. It was prominently brought into notice by Messrs. Crundall and Hurford, Army Veterinary Surgeons, who have had large experience of it in India. According to them, the mode of operating is to expose the testicle by the usual incision through its coverings; then seize the organ in the left hand, and with the fingers of the right separate the non-vascular from the vascular portion of the cord. The former may be cut through at once; the latter should be scraped with a blunt-edged knife until it is divided. But little hæmorrhage should follow this operation, and the animal may go to work in about three weeks.

By Torsion.—This method of emasculation consists in the removal of the testicle, entirely denuded of its coverings, by a rotary movement which twists the cord on itself in such a manner that its fibres become elongated and finally ruptured. This method of castration is one of the most ancient, a fact which is sufficiently explained by the simplicity of the manner of operating and the efficacy of the results obtained. It may be performed with the hands alone or with special instruments, and in the latter case those required, as well as a knife, are a clams and torsion forceps. M. Beaufils has invented an improved apparatus which combines the forceps and clams. To perform this operation, the scrotum being incised and the testicle secured in the usual manner, the steel clam is placed on the cord a short distance above the epididymis; the posterior, non-vascular portion of the cord is now to be divided immediately above the clam, great care being taken not to wound the artery. The operator should now give the clams in charge to an assistant, directing him to keep them well pressed against the scrotum. He should then seize in the forceps that part of the cord immediately below the clams, and commence the torsion by a rotatory motion from left to right; this movement should be performed with great slowness and regularity. The tissues of the cord soon become ruptured, the spermatic artery resisting longest, owing to its flexuous course and toughness. It is of the greatest

importance that as little bruised tissue as possible should be left within the scrotum; hence it is sometimes necessary to reapply the forceps after a few turns if the cord should begin to give way at a distance from the clam. It is also necessary that this latter instrument should embrace the cord *very* tightly, otherwise twisting may occur above the clam, and the consecutive inflammation will be greater than it would otherwise be.

Torsion of the spermatic artery alone is an operation which has been performed and highly spoken of by Molyneaux, Richardson, Professor Simonds, and others, who state that it causes little pain and is followed by a prompt cure. To practise it the cord is exposed and a portion of the artery isolated by a vertical incision. The vessel is now seized in an ordinary artery forceps and twisted in the usual manner. In this way the artery being obliterated the functions of the testicle are of course destroyed, and as neither the nerves nor other structures of the cord are either pressed upon or cut through, theoretically the proceeding seems a good one, but I cannot speak of it from experience.

By the Ecraseur.—This method consists of the ablation of the testicle by a particular instrument invented by Chassignac, and recently improved by that smart American Farmer Miles, having for its object the division of the tissues without effusion of blood, and consisting in the application around the tissues to be divided of a metallic chain put in movement by a particular mechanical arrangement. To castrate with the ecraseur the testicle should be exposed, the chain is then to be placed around the cord and tightened up quietly until resistance is experienced, when the motion should become somewhat slower, but with Farmer Miles' instrument it is hardly necessary to observe this precaution.

In this method it will be seen that the cord is divided without loss of blood, a simple wound results, not complicated by crushed tissues or the presence of foreign bodies, abundant suppuration usually follows, and cicatrization occurs quickly. One of the objections formerly made to this mode, viz , the length of time occupied in performing it, owing to the slowness necessary to proceed screwing up the ecraseur, is done away with by Farmer Miles' instrument, as it may be screwed up rapidly and yet but little hæmorrhage will usually result.

By the Actual Cautery.—In this mode a hot iron is employed as a hæmostatic, the section of the cord being made by a blunt-edged iron heated to redness. This is perhaps one of the oldest ways of castration, and was generally employed in the United Kingdom until the clams came in fashion ; but even now it is used to a considerable extent. The special instrument required are a clam, such as is used for torsion, and an iron of special form (such as this). The clams being applied on the cord, the posterior portion is to be divided with the knife as in torsion, and the vascular part slowly divided immediately below the clam with the iron, which should not be too hot. Resin is sometimes used when searing the cord, but I think it is unnecessary.

By Ligature.—This consists in binding, by a flexible cord, the whole or portion of the spermatic cord so as to interrupt the circulation in the testicle and prevent hæmorrhage.

In castration by the ligature the only instrument required is a knife, a needle, and a strong silk or cat-gut thread, and we may include in the ligature either the scrotum and the cord itself, or, as in the covered operation, the vas deferens or the artery alone.

In the first case the scrotum above the testicles is secured in a tight ligature, which is left on until spontaneous amputation of the parts below it occurs. This mode is seldom used on the horse. In ligaturing the exposed cord the string is tightly applied around it above the epididymis, and

it will be found a good plan to place a second ligature above the first, which should be applied by passing a curved needle armed with a double thread through the centre of the cord; the ends of the thread are then separated and tied, each part including one half of the cord.

Ligature of the vas deferens is sometimes had recourse to from the idea that the animal will preserve his vigour and energy, though the power of generation will be destroyed,—a doubtful advantage to say the best of it.

In practising castration by ligature of the artery alone, it is necessary to divide the posterior part of the cord above the epididymis, the action of the cremaster is thus annulled. A longitudinal incision should now be made in the structures surrounding the artery, and that vessel being isolated an aneurism needle carrying a cat-gut ligature is passed under it from before backwards, both ends of the thread are now to be brought back and tied so as to include *all* the flexions of the artery. Caution on this point is necessary, as if the ligature be only applied to one of the ascending circumvolutions of the vessel, and it be afterwards divided below this, bleeding will occur; in fact, the artery might as well not have been tied at all.

Crushing the testicles is sometimes resorted to, particularly by the Arabs, and is performed simply by placing the testicles and scrotum between two resisting bodies and applying strong pressure, which leads to disorganization of the glands.

Under the term "Bistournage" the French describe an operation which consists in the subcutaneous torsion of the spermatic cord, so as to obtain complete obliteration of the vessels, followed of course by atrophy of the testicles. The proceeding is one which requires a good deal of practice and dexterity, and as I have never performed it I will not attempt to describe it.

The animal being now operated upon, the next matter to decide is how to treat him. He should not, of course, be exposed to rain or cold winds, but if the weather is at all favourable, even the day after castration, it will be well to permit young animals to have some hours at grass daily; and in cases where this is impracticable, exercise should be given. For some days the diet should be rather low, to diminish the feverish symptoms; and should the scrotal swelling continue very large, it will be prudent to open the incisions with the finger, but care should be taken not to interfere with the adhesions between the cord and the canal. Some animals have a propensity to interfere with the scrotum with the teeth, and on those the cradles should be placed. With Farmer Miles's system, the animal may resume work in a day or two; and even when operated on by other modes, slow work may be advantageous in a week or ten days.

Having briefly mentioned the different modes of emasculating the horse, it will be proper to consider the various phenomena which succeed the operation, and in doing so it is necessary to distinguish between those which follow when the coverings are not incised, and those which supervene when the envelopes are divided. The symptoms apparent in the first case are of slight practical importance, but in the second instance there remains an open wound of a complex nature from the number of tissues divided, and in which various phenomena appear either during, or immediately after, the operation, or at some time more or less distant. We will term the first class immediate, the other consecutive or secondary. Independent of the normal symptoms which always succeed the operation, but in different degrees, according to circumstances, there are other symptoms which point to certain complications which sometimes occur, and these merit special consideration.

Amongst the "immediate phenomena" we may class pain, difficulty of movement, hæmorrhage, serous engorgement of the wound, and the introduction of air into the abdominal cavity. Pain is, of course, an inevitable consequence of the operation, however it may be performed. It varies in

intensity, according to the method used, but it is, nevertheless, difficult to say what system of operation is least painful, as it seems to me that the temperament of the subject and the dexterity of the operator have a great deal to do with the matter; but I am inclined to think that the clams do not cause so much pain as is popularly supposed, as the vigorous pressure exercised by them should destroy all sensation in a short time, while in the more surgical-looking torsion a small portion of bruised and painful tissue must remain at the end of the cord; but when the ecraseur is used this objection is done away with to a great degree, and the same remark applies to ligature of the artery. Difficulty of movement is also a frequent consequence of the operation, but this depends to a great extent on the susceptibility of the animal to pain, and disappears in a day or two, unless some accident has occurred.

The introduction of air into the abdominal cavity frequently follows castration; sometimes when the animal is released from the hobbles the air is heard to rush up the inguinal canal with a gurgling noise. For some time this was looked upon as a serious affair, likely to be followed by peritonitis, but as it occurs in a large number of cases without any such result the alarm seems groundless.

The secondary phenomena are those which accompany the development of the inflammatory stage following the operation. They comprise, the fever of re-action, inflammation of the cord and the scrotum, and the cicatrization of the wound.

The fever of re-action (or traumatic fever) succeeds castration just as it would follow any other lesion. Preceding suppuration, it occurs on the second or third day, and is characterised by diminution or loss of appetite, constipation, respiration and pulse quickened, membranes injected, etc. These symptoms vary in intensity according to the breed and constitution of the animal and the mode of operation. The fever will be slight and of short duration if the animal is underbred and of low sensibility, and if the operation has been quickly done; and, on the contrary, it will be more intense and continue longer in well-bred horses of nervous temperament which have suffered much during the operation. In ordinary cases this fever lasts for three or four days, and is terminated by the establishment of suppuration in the wound, the appetite returns, the animal becomes lively, and the health is re-established. In any case in which the traumatic fever has not disappeared about the twelth day danger, is to be apprehended.

Inflammation of the cord and the scrotum is also a necessary consequence of the traumatic lesion resulting from this operation, and it also varies in extent according to circumstances, particularly according to the operatory proceeding used. Thus, in the covered operation by the ligature or the clams, the cord is connected by its extremity to the tunic vaginalis, whilst in all other methods the cord being not so retained retracts towards the superior head of the canal, drawing with it the clams, ligature, areolar or bruised tissue, as the case may be. In these cases the intensity of the inflammation varies according to the retraction of the cord, the size of the foreign body, etc., but as there is always a complex wound which cannot close by the first intention, there is necessarily a stage of suppurative inflammation, preceded by an engorgement, more or less considerable, of the parts affected.

This engorgement, the first indication of the inflammatory period, is common to the cord and its envelopes. In the cord it is first caused by the interruption to the circulation due to the formation of blood-clots in the spermatic vein and artery, which subsequently leads to the obliteration of those vessels. Above the point where the circulation has been interrupted either by the clams, the ligature, the cautery, or any other way, the areolar

tissue of cord becomes infiltrated with serosity, and this infiltration so increases the size of the cord that it completely fills the inquinal canal. The liquids which distend the cord soon begin to be reabsorbed, and it diminishes in size, but preserves a certain amount of hardness due to the blood-clots which subsequently become organised.

In the scrotum, also, the engorgement commences to appear about the second day. It is due to the serous infiltration of the areolar tissue. The enlargement feels hot and painful, and frequently extends along the belly to the sheath, where its size is sometimes considerable ; but as long as it remains confined to the inferior face of the abdominal walls, though it be very large, and advance along the belly even as far as the chest, it is not a serious matter, as, when the scrotal swelling disappears, the œdema of the belly is also gradually re-absorbed. The matter, however, is very serious when the swelling takes an upward direction on the sides of the abdomen, and then also the thighs become engorged. Under such circumstances gangrene is to be feared, a grave complication, to which I will again refer, and to prevent which is of the greatest importance. This inflammatory engorgement, which is particularly large in animals of soft or lymphatic temperament, or in those subjects which are exhausted by illness or fatigue, varies according to the method in which the operation was performed. Thus it is always very great when the ligature is used around the whole of the cord, and, in my experience, very slight when torsion has been properly performed.

The suppuration consecutive to the inflammatory engorgement begins by a slight oozing of sero-purulent fluid, which bathes the lips of the wound, becoming gradually more thick and abundant, finally assuming the character of true pus. This suppuration may extend more or less deeply. Thus when the clams have been used, which prevent the cord being deeply retracted, the purulent secretion being limited to the extremity of the cord and the borders of the incision is somewhat superficial ; but when the cord is drawn up, as occurs after castration by torsion, by cautery, etc., the suppuration is more deeply seated. The duration and quantity of the suppuration is also influenced by the cleanness of the wound and the state of the surrounding structures. It is generally very profuse after the covered operation, as the clams being placed above the fibrous tissue a large cellular surface is exposed. The duration of the suppuration is also influenced by the presence of foreign bodies, such as the eschar, ligature, etc., in the wound ; and the more quickly they are eliminated, the sooner will the secretion diminish.

The manner in which the cicatrization of castration wounds occurs is due to the nature of the lesion ; it is accomplished by adhesive inflammation in the upper part of cord, and suppurative inflammation in the lower part and the scrotum. The adhesive reunion in the upper part of the cord occurs quickly. It commences some hours after the operation, and is favoured by the intimate contact which the swelling establishes between the external surface of this organ and serous membrane, which exudes a plastic lymph, by means of which an intimate union is effected between the stump of the cord and parutal lining of the canal, constituting true union by the first intention, and is complete the second day. After a time the union between the cord and the serous tissue becomes more intimate, and the cord itself ultimately becomes transformed into a sort of fibrous ligament.

To secure this adhesion by the first intention, it is essential that the inflammation of the parts should be moderate. If it is very intense the exudation loses its organisable properties, changes its nature, and becoming pus-like, cannot serve as a means of union between the cord and the canal.

The cord then remains isolated on all sides from the surrounding structures, and being the seat of an abnormal irritation, it becomes of a great size ; the granulations at its extremity do not adhere to the neighbouring tissues, but become hypertrophied, and give rise to the pathological condition known as Champignon.

At the lower part of the cord and the lips of the wound, when matters progress well, granulations are developed which secrete pus, and gradually contract and heal up.

No matter how well castration has been performed, there are certain unfortunate accidents which may supervene ; and amongst these I may mention Colic, Hæmorrhage, Gangrene, Amaurosis, Excessive Scrotal Swelling, Abscess, Champignon, Hernia, Peritonitis, and Tetanus.

Colicky symptoms are most common when the clams have been used, and are probably indicative of pain caused by them. As a rule, slight exercise is sufficient treatment, or, if the pain remain, unabated fomentations may be used, but most frequently no treatment need be adopted.

Hæmorrhage may be either primary or secondary. In the former case it is due to the insufficiency of the hæmostatic means employed, or to the operation being badly performed, or it may occur from the artery of the cord or vessels of the scrotum being unusually large, or, as mentioned by Mr. McGillivray, from laceration of a spermatic artery above the point of section, either by excessive traction or wound with the knife.

Secondary hæmorrhage is chiefly to be feared when the clams are used, and are not put on sufficiently tight, or have been interfered with. In such case, when they are removed, troublesome bleeding may occur.

The danger of hæmorrhage varies according to whether it is primary or secondary, and in the first case according to the form of operation. Secondary bleeding is most to be feared, as the retractility of the vessels is impaired by the inflammation. For treatment, the effect of cold affusions should first be tried, combined with external pressure by the hands ; and, should this not succeed, a rug wet with cold water should be placed across the loins, and a plug of fine tow steeped in water or solution of perchloride of iron placed in the wound, and even secured by sutures, if this is necessary. (This should be removed within twelve hours.)

Should the bleeding still continue, it will be necessary to cast the animal, discover the bleeding point, and seal it up by actual cautery or the ligature. This, of course, is a last resort, and it need very seldom be done, as even when the flow of blood seems very great, in most instances it will cease on the employment of the simple means above detailed.

Amaurosis has been observed to occur after castration, and generally occurs when excessive hæmorrhage has supervened. Spontaneous recovery may take place, but the prognosis is grave and treatment of little use, though tonics may be admissible.

Œdematous swelling of the scrotum is always to be expected to some extent, but even when very large it need not cause alarm. A few punctures with a lancet, exercise, hot fomentations, and perhaps a little diuretic medicine will generally be found sufficient.

Gangrene is a very serious complication, which not unfrequently succeeds castration. It is particularly common in warm, damp weather, and in weak, bad-constitutioned animals, and may be caused by dirty instruments or hands. The symptoms of its invasion are increased swelling of the scrotum and sheath, and the engorgement has a tendency to take an upward direction towards the loins, the thighs also becoming affected. This swelling sometimes crepitates, and the animal lies a good deal and gives up feeding. The secretion of pus is also suspended, and in its place a sero-sanguinolent fluid, exhaling a fœtid and characteristic odour, is poured out. Cauteriza-

tion of the wounds and the injection of antiseptic lotions is the only chance, but unfortunately the termination is almost invariably fatal.

Abscess of the scrotum occasionally occurs when the wounds heal too quickly, but as a rule it is not a very serious matter, the treatment being to open the incisions with the finger or to puncture the abscess with a lancet. Sometimes the abscess forms in the region of the loin, and it then forms much more slowly, not appearing for three or four weeks or more after the operation. A slight swelling is first noticed in the groin; the animal becomes lame and shows acute pain, and as the swelling increases he cannot lie down. After some time on manipulation, the fluctuation characteristic of an abscess may be detected. Hot fomentations, and puncture when the abscess is matured, is the appropriate treatment.

Champignon is the term applied to a sort of tumour or cauliflower-looking growth, which appears at the cut extremity of the spermatic cord, or in the thickness of that organ. It may be limited to the end of the cord, and form sometimes a very large tumour, and it is then said to be extra-scrotal, or it may be within the sac, and it is then said to be subcutaneous, and is termed extra-inguinal, intra-inguinal, or intra-abdominal, according to the portion of the cord involved.

The etiology of champignon is involved in obscurity in many cases. Speaking generally, it may be said it proceeds from an excess of inflammation, due either to the mode in which the operation was performed, or from circumstances which then existed or occurred subsequently. Thus, for example, it is stated that very violent traction exercised on the cord whilst operating favours the formation of champignon, and it is also asserted that inconsiderate handling during the period of cicatrization, notably the repeated introduction of the fingers into the inguinal canal, destroying the adhesions between the cord and the serous lining of the inguinal canal, augment the inflammation, and give rise to one of the conditions likely to cause champignon. It may also occur without any apparent cause; the individual idiosyncrasy may have a part in its development. It is said to be most frequent in cold weather, and the insufficient tightening of the clams, or the omission of separating the end of spermatic cord from the scrotal wound when removing the clams are also set down as causes. Excessive exercise during the healing of the wounds is also supposed to influence its growth, and humid and unhealthy stables are credited with some of the ill effects.

Champignon is made up of an embryonic or inflammatory tissue, pierced by a number of vessels of new formation. It is formed by the proliferation of the plasmatic elements of the conjunctive tissue, which have undergone a retrograde process, causing tumefaction of the cord, and ultimately the formation of an abscess in the middle of that organ. The walls of this abscess soften; numerous and intimate adhesions occur between the cord and the canal, owing to the vascularity of the inflamed parts. When the champignon is situated below the scrotum, it forms a rounded, reddish, pediculated tumour.

Extra-scrotal champignon is developed at the cut extremity of the spermatic cord, where it forms a granulatory tumour of a bright red colour, in size varying from a hazel nut to a man's head, or even larger, and Bouley has mentioned a case in which the tumour descended to the hocks. The large size which the tumour attains indicates its power of growth and its nutritive activity. When outside the scrotum, champignon is not generally a very serious affair, for it can be easily removed on account of the lesion being limited to the divided part of the spermatic cord. Occasionally the tumour acquires such considerable volume that by its weight it exercises painful traction on the cord. In such an exceptional case the animal moves with

difficulty, the posterior parts seeming weak, whilst the prolonged and abundant suppuration of which the champignon is the seat debilitate the anima Nevertheless, in the large majority of cases extra-scrotal champignon need not give rise to general symptoms, as it may be removed before becoming large enough to do so. In subcutaneous champignon the symptoms depend upon the extent of the cord involved. At the beginning an œdematous tumefaction in the region of the scrotum, with a certain difficulty in the movement of the hind limbs, and traumatic fever are observed.

If the induration of the cord is below the inguinal ring (extra-inguinal), on exploring the testicular region, the cord will be found increased in size, irregularly pear-shaped, hard, somewhat painful, and adhering to its envelopes ; above this tumour the cord will be found soft and free from tumefaction. Thus limited, the champignon may become chronic, and the animal work for years (I myself know a horse so affected for fourteen years past), but sometimes lameness may result from induration of the lymphatic ganglions of the groin. In some cases this form disappears spontaneously, an abscess forming in the locality, and little by little the induration disappears.

When the induration invades that portion of the cord contained in the inguinal canal the power of locomotion is affected. The limb on the side affected is held abducted during the walk, fistulas exist in the region of the scrotum, which is engorged, the traumatic fever is violent, the animal lies constantly, and the appetite is lost. When the enlargement ceases below the superior inguinal ring, and is definitely formed, then the swelling of the scrotum decreases, and the general symptoms become amended. To ascertain the height which the tumour has attained rectal exploration is necessary.

In case the tumefaction extends the whole length of the cord, the tumour is said to be "intra-abdominal, and is a very grave matter. The animal suffers great pain, and frequently succumbs to the exhaustion produced by the irritative fever and the profuse suppuration which occurs. Not unfrequently the abscess which forms in the centre of the cord discharges its contents into the abdominal cavity and causes speedy death. In other cases the pus finds an external outlet, and if the animal be vigorous and healthy, he may resist the exhausting effects of the suppuration, which persists until all the altered parts of the cord are eliminated. Sometimes purulent infection occurs, metastatic abscesses form (in the lungs more particularly), and death closes the scene.

In the first stage before the tumour of the cord becomes distinct, surgical measures should not be put in force ; emollient lotions and fomentations with purgatives and drenches as derivatives should be used. When this does not succeed, thermo-puncture may be tried, the scrotal enlargement being pierced with the hot pointed iron ; under this treatment resolution sometimes is obtained ; but if not, a surgical operation is necessary.

The surgical methods for the treatment of champignon are four in number, viz., the clams, the ligature, ecraseur, and cauterisation.

The clams, which are suitable only for extra-scrotal and inguinal cases, should be placed well above the tumour on the healthy cord, and to effect this, all adhesions to the tumour should be torn through with the fingers, or the handle of a scalpel ; a rather strong clams should be used, and they should remain on for three days, but one disadvantage of their use is that they sometimes cause the formation of a new champignon.

When the induration extends to the upper inguinal ring, the ligature must be employed, and if very high up, a porte-necuel should be used. The cord being separated as before, the ligature should be tightly tied above the diseased part. The elastic ligature has been used with much success. The ecraseur is perhaps the best method of removing the champignon ; it is ap-

plied in the same manner as the ligature, and the screw being gently tightened, the structures are soon cut through. In practising cauterization, the length of the iron must be in proportion to the depth of the tumour. Being brought to a white heat, the iron is passed into the diseased mass several times, and if the tumour be very large, it is well to excise some of it with a bistoury, and check the hæmorrhage with the iron. This operation is particularly applicable when the champignon is intra-abdominal, as the abscess may be reached, and the pus being discharged externally, healthy action is set up, and a cure results.

Fistulæ in the scrotum occasionally succeed castration, and are to be treated either by dividing the masses with a bistoury, applying caustics to them, or using the cautery, and each of these means has its advocates. I prefer the knife myself.

Inguinal Hernia is an accident which may occur either during or immediately after castration, or some hours later, or when the clams are removed, and consists in the descent of the intestine into the inquinal canal. Of course, the indication is to return it, and for this purpose the animal should be placed on his back and the taxis employed. When the intestine is in the abdomen, a few points of suture must be run through the scrotum, which quickly causes an engorgement generally sufficient to prevent the re-descent of the bowel.

Of Tetanus and Peritonitis I think it unnecessary to say anything, except that they sometimes occur as a result of castration.

It now remains for me to say a few words on the relative value of the various operations I have described, and to point out those which I consider the best, having regard to the facility of the proceeding, the after treatment necessary, and the chance of immunity from the various accidents which follow castration.

All the methods have their advantages and their inconveniences, and almost every operator has his prejudices, each one preferring the way he himself practises. It is impossible from statistics to determine the relative mortality of the different means.

The clams offer the double advantage of closing the inguinal ring, and favouring adhesion of the cord to the canal, but they are supposed to cause severe pain, they irritate the lips of the wound, they require a second operation for their removal, and they may be torn off by the teeth. As to the excessive pain, that at least is problematical, for it is a singular fact that a man when castrated by the ligature, though he feels severe pain when it is first applied, soon loses sensation in the part, and would this not be so in the horse?

Castration by the cautery is easy to perform, produces complete emasculation, and does not require a second operation; but it is cruel-looking and somewhat tedious, and there is sometimes a difficulty in arresting the hæmorrhage.*

Torsion is the method which for some years I chiefly employed myself, and I have lost but one case thus operated on. It is easy to execute, the subsequent inflammation is not generally very great, no second operation is necessary, and the wound heals quickly, and this also appears to be the opinion of that eminent authority, Professor Williams.

Ligature of the whole cord is seldom performed, and ligature of the artery alone with silk has not been attended with good results, the fatality being very high; but torsion of the artery is highly spoken of by Professor Simonds and others, and during the past season I have castrated twenty-eight horses, including two aged stallions, by ligaturing the artery with carbolised catgut

* Seldom, unless the iron is used too hot.—J. S.

with the most satisfactory results, the animals in every instance doing exceedingly well, recovering quickly, and seeming to suffer little. This mode of operation is decidedly the most scientific and surgical, and is one which I would like to see more extensively practised.

Division of the cord by scraping is not much used in these countries, but is very general in India, and even in that hot climate Mr. Hurford says it is very free from ill results. Formerly castration by Chassignac's ecraseur was a tedious and painful business, and there was some danger of a hernia occurring from the prolonged struggles of the animal while the instrument was being screwed up. Farmer Miles' invention, or improvement, has altered this to a considerable extent, and the operation can now be performed tolerably quickly, without fear of hæmorrhage. In this method there is neither a foreign body nor a piece of dead tissue left in the wound, and the horse may go to work the day after he is castrated, the only precaution required being to keep the wound open, by separating the lips of it with the fingers. For my own part I have thus operated with success, and I intend to extend my experience of it next year; but at present I am disposed to place most reliance on ligaturing the artery with carbolised catgut, which soon becomes incorporated with the tissues, and unlike silk and other such substances, does not act as a foreign body in the wound.

On drawing this lengthy paper to a close I trust, gentlemen, that if I have not said anything new, I have, at all events, afforded you the grounds for a discussion. Of course, in a paper on Castration, nothing very original might be expected, and as this is more a compilation than an essay, I trust the debate may atone for its shortcomings. You will observe that I have not said anything as to the castration of cryptorchoid horses, and I trust that that portion of the subject will be dealt with by some of you.

Thanking you for the patience you have exercised in listening to my essay, I leave the matter in your hands, in the hope of obtaining some information from the results of your experiences.

The discussion which followed Mr. Simcocks' paper was of an exceedingly interesting character, in which the President, Messrs. W. Pallin, J. Malcolm, L. Hunter, J. Freeman, J. Preston, J. Bell, the Secretary, and others, took part. Mr. L. Hunter, of Dublin, gave a very exhaustive description of his method of casting and securing vicious horses for castration, and detailed the case of a vicious race-horse at the Curragh, in which he had succeeded by this method in effecting this purpose, after having failed, during a period of four hours, to cast and secure the animal by the ordinary methods, and he concluded his observations by describing a case of effusion into the pericardial sac, which he suffered in his own person, as a result of his violent contention with the animal spoken of.*

The thanks of the meeting to Mr. Simcocks for his able paper were proposed by Mr. Hunter, and seconded by the Secretary, and were carried unanimously, and the essayist having acknowledged the resolution, the date of the next meeting was arranged, and a vote of thanks to the President concluded a very interesting and successful meeting.

J. J. SPERRING, F.R.C.V.S., *Hon. Sec.*

[The above report did not come to hand in time for publication in our last issue.—ED. V. J.]

* It appears that Mr. Hunter, whilst suffering from this condition, lay for forty-eight hours in a perfectly insensible state, there being a complete absence of pulse, heart sound, or appreciable respiration—a pathological condition which was, and is still, considered by his medical attendants to be unique in the records of medicine.

SCOTTISH CENTRAL VETERINARY MEDICAL ASSOCIATION.

THE fourth quarterly meeting of the above association was held in the Salutation Hotel, Perth, on 6th October. The President, Andrew Spreull, Esq., F.R.C.V.S., was in the chair, and the following members were present, viz. :—Messrs. Johnston, Perth ; Philp, St. Andrews ; Fingzies, Lochgelly ; Hunter, Dundee ; Ritchie, Forfar ; Constable, Inchture ; Black, Lochee ; and Clark, Secretary, Coupar Augus ; Messrs. Keay, St. Martins, and Dr. Robertson, Errol, being present as visitors. Apologies for absence were received from Messrs. Rutherford, Edinburgh ; Hampton, Arbroath ; Bissett, Brechin ; Reid, Auchtermuchty ; and Panton, Blairgowrie.

The minutes of the previous meeting having been read and confirmed,

Mr. Wm. Panton, Blairgowrie, was unanimously elected a member. Mr. Keay, St. Martins, was nominated for membership.

The CHAIRMAN brought before the meeting the subject of the Fleming Testimonial, asking the voice of the meeting as to whether it was desirable to subscribe as an association, or it be left to individual members to subscribe as they considered fit. This last proposition was received with most favour, and agreed to. Letters were read from Mr. Pottie, Paisley ; Mr. Hill, Glasgow ; and Mr. Rutherford, Edinburgh ; anent united meeting of the three Scottish associations. It was intimated that the first meeting would be held in Glasgow on the 24th inst., and urging strongly that as large a muster as possible be present.

This being the last quarterly meeting of the year, Mr. Johnston, Perth, proposed that the present chairman, secretary, and treasurer should hold office for another year ; seconded by Mr. Ritchie, Forfar.

Mr. PHILP, St. Andrews, proposed that Mr. Bissett, Brechin, be elected a vice-president in the room of Mr. Robertson, Madduty, who declined ; and that Mr. Reid, Auchtermuchty, and Mr. Ritchie, Forfar, continue vice-presidents as formerly ; seconded by Mr. CONSTABLE.

The CHAIRMAN then proposed that, owing to the sad and melancholy death of Mr. J. B. MacGregor, Crieff, an esteemed member of this association, a letter of condolence be forwarded to his mother, and that a copy of said letter be entered in the minutes of the meeting.

The meeting then proceeded to continue the discussion on Mr. Constable's paper, read at last meeting, subject, "Strangles in Horses, with Notes of a Case affecting the Human Subject." Dr. Robertson, of Errol, medical attendant in this unique case, was kindly present to give explanations.

Mr. JOHNSTON was next called upon to read his paper on "Counter-irritation," which gave rise to a lively discussion ; so much so, that it was resolved to continue the discussion at the next meeting.

After votes of thanks being accorded to Mr. Johnston, Dr. Robertson and the Chairman, the meeting was brought to a close.

J. CLARK, *Hon. Sec.*

Coupar Angus.

THE ROYAL VETERINARY COLLEGE.

THE winter session of the Royal Veterinary College commenced on October 2nd, when there was a very large attendance of members of the profession, and a full muster of students present to inaugurate the event, and to hear the introductory address, which was delivered this year by Professor Axe. Major-General Burnaby, M.P., occupied the chair. The address, which was listened to with marked attention and frequently received with applause was as follows :—

"Mr. Chairman and Gentlemen,—We are met together to-day, in accordance with prescribed custom, to inaugurate the commencement of another academical year.

My colleagues have deputed to me the proud privilege and pleasure of introducing you, on this the first day of our session, to the scholastic duties on which you are about to enter, and in their name and in the name of the governing body of the College, I bid each and every one of you welcome to our *alma mater*.

The opening of a new medical session is, to all who appreciate aright the relations and responsibilities of your teachers and yourselves, an imposing, nay a solemn and momentous occasion. To many whom I see around me it is a landmark of the far-distant past, the opening chapter in the history of many a hard-fought battle of life, prefaced by the gilded dreams of boyhood and the romance of youth. To your teachers it is the chronicler of time, the hand that tells of fleeting years, and points to duties past and others yet begun.

For them it is an hour of supreme anxiety, pleasure, and pride. Anxiety lest we who love our duty and our profession should fail to inspire an equal love of them in you; pleasure, because of the confidence and encouragement we derive in the presence of so many of our old and good friends, former students of our schools; and pride in the honourable presence of distinguished members of the governing body, whose never-ceasing devotion to our cause has made and maintained the College of St. Pancras one of the foremost veterinary school in Europe. My purpose, however, is not with the relative merits of schools. It is more especially to those who are with us to-day for the first time, and who have resolved to make veterinary science their future study, that I desire to tender some words of counsel and advice; and, firstly, I would congratulate you in all sincerity on your choice of our profession. In electing to become the servant and healer of the sick dumb, you have displayed a noble sentiment at the outset of your career, a wholesome promise of humane enthusiasm, which, if maintained to the end, will bring a reward more precious than wealth, and more abiding than honours of place.

The calling you are seeking to follow ranks with the most exalted and sacred of man's appointments, and needs for its successful pursuit the highest powers of the mind. That calling is the profession of veterinary medicine. By medicine we understand all those various means and methods of application which the resources of science afford us for the preservation of health and the cure of disease. It is the science of health, of life, and of death. How vast then, how comprehensive, how seemingly appalling will appear the domain of your chosen study! Do not, however, let the magnitude of the task before you cause one halting step, one sentiment of fear, but hopeful and resolute, relying on the spirit by which alone greatness is achieved, steadily and intently pursue it undaunted to the end.

In asking you to put forth these high and noble qualities in a high and noble cause, I do not despair of success in any one of you who chooses to let "I will" wait upon "I can." If there be among you one possessing the intellectual qualifications which are guaranteed by your presence here to-day, who entertains doubt and misgiving as to the issue of your endeavours in this, the first essay of your life's work, to him I say, "Take heart!" Bring with you but courage and resolution, fortified by a sense of duty, and directed by the spirit of science, and you may, if you will, not only be successful students here, but men of real worth hereafter. Remember, success in all things depends, not so much on "the power to achieve, as the will to labour." Many a shining light has been eclipsed by the want of that priceless quality—will, force of purpose—call it what you may.

As you proceed along your journey it will soon be obvious that medicine is a progressive science, and must ever continue so until nature has yielded up to the biologist and the physicist her last secret in all that concerns life. For the votary of medicine, then, there is no hope of finality. You will, therefore, please only regard your career here as the stepping-stone to a life of learning, a perpetual studentship, lured on and fostered by the ever-increasing light which your labours will from day to day reveal to you in the boundless and inexhaustible field of science. I need hardly assure you, that medicine, be it human or comparative, whether applied to man or to the lowest of God's creatures, has the same principles underlying it, and requires for its successful pursuit mental qualities and scientific attainments as high and as far-reaching in the one case as in the other. You need not, therefore, be under any apprehension lest the intellectual order of your mission should suffer by comparison with that of the sister profession. The scientific pathology of to-day owes its brightest chapters, its greatest truths, and its most beneficent teaching to the study of morbid processes in the lower animals; and with the most profound respect for the views of those who formulate the curricula of our medical schools, I make bold to think that comparative pathology is indispensable as an element in the evolution of human medicine, and must, sooner or later, became an essential part of the education of all who aspire to the healing art. Human and veterinary medicine are bound together by the strongest natural affinities, and their intimate science relations demand that those who seek to comprehend the one must have regard to the teaching of the other. Yes! side by side, hand in hand, step by step, must be the order in which the two faculties must, sooner or later, resolve to proceed—waiting upon and fostering each other's aims and efforts, sharing each other's honours and labours, and emulating each other's excellencies.

In such mutual co-operation and support as will enlarge the foundation on which medical knowledge rests, appears to me to reside the future hope of medicine, both human and comparative. This lofty and commanding aspect of our calling is no mere picture. The guardianship of the health of man against the attacks of disease falls fairly within our province, and for the sake of suffering humanity I hope it will ere long be even more justly acknowledged and sanctioned by the State.

Without the aid of veterinary science the department of State medicine in this country must ever continue what it is at the present time, an unreliable and inefficient organisation. The very large number of diseases now known to be transmissible from the lower animals to man renders a knowledge of comparative pathology indispensable to the efficiency of our sanitary service. It may not be soon, but the time must come, when the authority and active assistance of veterinary science will become a recognised essential in the general administration of sanitary police. Educated as veterinary surgeons now are, trained to observe, to record, to reason, and to act, familiar alike with the habits and instincts of animals, and the life conditions of man, they have become a source of scientific strength which no amount of prejudice can long exclude from participating in the defence of public health.

With such destructive diseases as Tuberculosis, Rabies, Anthrax, and Glanders constantly in our midst, one and all transmissible to man by the most simple as well as the most subtle of means, each contesting and defeating all the resources of therapeutics and hygiene, bringing death, desolation, and poverty into our homes. In the face of these things, I say, there is surely reason in suggesting that those whose special training has fitted them to detect these virulent diseases, and to devise means for their extinction in the lower animals, represent a power and an indispensable element in the sanitary service of the country.

This, gentlemen, is the highest and most ennobling view of your calling, and one which should ever be before you. The pathological and sanitary relations of man and the lower animals is a subject of the most vital and pressing importance, and offers to our profession a wide field for the exercise of its powers for the good of mankind. It comprehends, among other equally important questions, the natural history of parasites in relation to parasitic diseases, and the propagation of Tuberculosis by the consumption of flesh and milk. In the latter connection you will naturally be led to consider in what measure the great prevalence of this disease, both in man and animals, may pertain to the breeder of cattle. I do not hesitate to affirm that the time has already arrived when some restraint should be put upon the present unbridled use of tuberculous oxen for breeding purposes, as well as for a more energetic interference with the disposal of tuberculous flesh.

Both observation and experiment clearly point to our present reckless system of cattle breeding as a menace to public health, and call for legislative interference and measures of control. While, however, you may share with the sister profession the dignity of protecting and raising the health standard of the people, the chief concern and mission of your life will be devoted to our herds and flocks, our studs and kennels—to those noble creatures, indeed, whom man has domesticated and rendered subservient to his various wants.

You are about to undertake one of the most difficult, the most comprehensive, and the most embarrassing of all the pursuits of science ; and at the outset of your journey it is necessary that you should seriously ask yourself whether you possess the necessary qualifications for such an enterprise. That your general education is fairly good is admitted by your presence here to-day ; the amount and extent of your general knowledge has been duly gauged, and you have been found to possess a certain amount of a certain kind of subjective information. Your passport into this school is based chiefly on your powers of memory, on your capacity to store up and retain a number of facts gathered together in the course of what is termed a liberal education. Now, although this faculty is of the highest importance as a factor in the intellectual campaign in which you are about to engage, I must seriously caution you against placing too much reliance upon it for the success of your medical career. The manner and nature of your prospective studies will be found altogether different from that of your past scholastic training. Your teachers are "no longer schoolmasters, to set daily lessons for you to puzzle out at home and commit to memory for mere repetition." Nor will all the advantages of a well-stocked library, supplemented by the most vigorous devotion to study alone, avail you in the pursuit of medical knowledge. The spirit and method of your future action must be framed on lines widely different from those laid down for the acquisition of a general education. Your attention will now be strictly devoted to the consideration of natural science, to an inquiry into all that concerns life, health, disease, and death. You will be brought face to face with nature, and it will be your privilege to interpret her, and the aim of your mission to understand her ways. In this connection your scholastic education, and especially your knowledge of mathematics and physics, will prove of infinite advantage, serving as they will to unveil those fundamental laws which govern the world of inorganic nature, and to explain many natural phenomena which would be otherwise unintelligible.

Your knowledge of Greek and Latin will enable you to disperse the obscurity of medical terminology, and your acquaintance with modern language is equally valuable as a means of extending your communion and reading beyond the people and literature of your own country ; but let me assure you that valuable as all this may be, it is but a fraction of the intellectual

means necessary to the accomplishment of the great task before you, viz., a knowledge of the science and art of medicine.

From the arena of words and figures, in which you have doubtless spent considerable time and labour, you are now about to pass into the world of science to become the investigators of truth and order, and to search out the facts which underlie the laws of health and disease.

To this end your powers of observation and judgment are indispensable, and must be steadily and carefully tutored, and your inductive faculty trained to strengthen and enlarge your understanding.

Observation, I say, patient and untiring observation, supplemented when necessary by experiment, is ever needful to the interpretation of the facts you will require to know.

In pursuing the study of medicine all the senses will at one time or another be called into requisition as means of observation, and it will be your first duty to cultivate them to exalt their powers of perception and to enlarge their intelligence.

The eyes must be trained to see, the ears to hear, the tongue to taste, and the fingers to touch. The more these faculties are exercised the more sensitive and reliable they become. I cannot convey to you an adequate idea of the importance which attaches to this discipline and refinement of the senses as factors in the acquirement of medical knowledge. The senses are the avenues or channels by which the mind is fed, and through which our experience of the outer world and the processes of life and disease are acquired. It is, I fear, in consequence of the disregard of their tuition and careful exercise that so many discordant views on questions of soundness are heard in our law courts. Even at the present time a vigorous and most laudable attempt is being made to correct the evils which accrue to our profession from confliction of evidence, by endeavouring to define what does and what does not constitute unsoundness, but I venture to think that the discrepancies of which we complain involve questions of opinion far more frequently than questions of fact—the existence or non-existence of disease much oftener than the nature and extent of disease, and it seems to me that whatever agreement may be arrived at as to the facts of unsoundness, a uniform standard of proficiency in the exercise of our senses and in the interpretation of the phenomena of health and disease can alone redeem us from failure, and relieve us of those troublesome diversities of opinion which so painfully harass our law courts and ourselves.

Passing to the special course of study as set forth in the curriculum of our school, you cannot fail to be struck with the wide and varied field of knowledge over which you will require to travel, and the number and complexity of the subjects with which you are expected to become acquainted. You are, indeed, confronted with a formidable list of sciences, but accept from me the assurance that none of them can be dispensed with. Each is the compliment of the others, a page in the chapter without which medicine is meaningless and abortive. Anatomy, physiology, chemistry, and clinical observation constitute the chief sources of medical knowledge, and to them I would invite your special attention.

Anatomy has ever been regarded as the foundation of medicine, and will demand your most earnest and painstaking attention. Seeing that the object of medicine is to prevent and to cure the countless ailments of the animal body, it will be your first aim to acquaint yourselves with the secrets of its conformation and structure. If you would aspire to a higher position than the ignorant and ignoble quack you must steadfastly devote yourselves to the work of analysing the machinery of life, of acquainting yourselves with the nature, extent, and variety of the numerous organs and parts out of which the body is built up. To acquire this information you will have

recourse to the operation of dissection. Here you will obtain your first insight into the mysteries of biology ; and as you proceed diligently to unveil the architecture and design of God's noble works, the spirit of science, at first perhaps cool, almost to indifference, will soon wax warm and resolute, and from the passive observer you will, I trust, in time become inspired with an enthusiastic love of the work for its own sake.

The opportunities for studying anatomy at this school are, I am proud to say, as complete as an enlightened governing body can make them ; and if the result of your endeavours fall short of success, the fault must be sought for either in your want of method of study, your incapacity, or your lack of energy. In this important branch of your curriculum you will have ample assistance and guidance in the services of my colleague, Mr. Shave, aided by Mr. Pottinger, both ardent and praiseworthy workers, and who, I am sure, will not only be your guides, but in the difficulties which must at times beset your path, they will prove your advisers and friends. Ever remember in your struggles to learn that your teachers have an interest in your success, and that they delight to render it complete for the honour and glory of their school and themselves. As one who for several years shared in the teaching of anatomy in this institution, let me impress upon you the importance of a practical acquaintance with this branch of your study, and, at the same time, caution you against the delusive influence of books and pictorial illustrations, and I would urge you to rely only on the never-changing, always truthful, *rôle* of nature. Do not, however, misunderstand me ; books, like lectures, demonstrations, and diagrams, are indispensable auxiliaries to point the way, to inform you how and where to look, and what to look for, but they all lack the stability of practical research, they fail to refine the touch, to impart manipulative dexterity to the hand, and above all to give the glow of confidence which so inspires the surgeon, and illumines the path of medicine.

The mere book anatomist is a helpless object of pity, a man without resource ; he may be elegant and profuse in anatomical learning, but utterly devoid of real knowledge, competent only to ruin the last remaining chance of remedying the defect he may be called upon to treat. He is a man of words without ideas ; to him fractures and dislocations have no differential qualities, muscular paralysis and mechanical impediment admit of no distinction, and the brim of the pelvis will at any time suffice for the external iliac. He is altogether oblivious of medical and surgical landmarks, and blinded to the order, beauty, and economy of nature by a chaos of meaningless verbiage. He can fluently run off the origin, insertion, and relations of muscles, the distribution of nerves, and the course of vessels, and do a big and elaborate paper on the structure of the brain and eye ; and yet, forsooth, when the parts themselves of which he writes so profusely are brought before him he fails to recognise them. Gifted with a memory for words, he becomes the unfortunate possessor of a large amount of mere information. He is contented to accept anything secondhand to save the labour which real knowledge necessarily entails. Do not let this be said of any of you ; for, rest assured, if you elude the vigilance of your examiners, you will not long enjoy the triumph of your indolence. A discerning public will surely sooner or later discover your spurious and worthless qualification.

Besides furnishing you with the facts of anatomy, thorough and painstaking dissection will also strengthen and enlarge your faculty of observation, and lay the foundation for a methodical pursuit of the sister sciences ; it will likewise enlarge your aptitude for work, and give you confidence in all you say and do in which the structure of the body is concerned. As a means of framing the mind to observation and to thought, I know none more

simple and effectual. Let me entreat you to lose no opportunity of acquiring a knowledge of anatomy. Much of the skill and manual dexterity of the surgeon is acquired in the dissecting-room. It is by the knowledge obtained there that he is enabled to direct his knife so safely and surely amidst the most intricate and delicate structures, and thus cut short disease and spin out the thread of life. In no less degree it subserves the purposes of the physician and the physiologist, and thus conduces to the science and art of medicine.

Equally with anatomy will the science of chemistry demand your earnest and painstaking attention. Besides affording you the more general information concerning the intimate relations of matter, which in itself is most interesting and attractive, it will likewise give you an insight into the nature and composition of the elementary tissues of the body and of the various secretions which are elaborated within it, and at the same time enable you to appreciate those complex chemical processes which are constantly taking place from the beginning to the end of life. The manner in which the food is digested and assimilated, in which the blood is changed from arterial to venous, as well as numerous other phenomena which occur in the laboratory of life, would all be intellectually lost but for a knowledge of this all-pervading science. If you desire to become sound physiologists, you must first become good chemists. There is no possibility of your accomplishing the one without fairly mastering the other. Further, a knowledge of chemistry will enable you to understand the nature and properties of drugs, how to combine them properly, and also to judiciously apply them in the treatment of disease. Its application to pathology is also of the highest importance. Of this you will have ample daily experience in the wards of the hospital, where chemical reagents will frequently be employed in determining the existence of disease, and the nature of those adventitious products which so frequently imbue the solids and fluids of the body.

Moreover, it cannot be doubted that an intimate and increasing knowledge of chemistry has contributed in a very large measure to the efficiency of preventive medicine, by placing within our reach the means wherewith to combat the spread of contagious and other disorders. With your minds fresh and full from the study of anatomy and chemistry, you will then proceed to consider the animal body in an altogether different light from that in which you have recently viewed it.

You have explored its complex physical structure, and carefully examined and admired its exquisite workmanship. Each part has been separately submitted to a searching investigation, both in itself and in its relations to those about it, as well as to the whole ; you have, in fact, unravelled the architecture of the dead and motionless organism very much in the same way as you would study the construction of a steam-engine or the mechanism of a watch. But this is far from sufficient for the purpose of your calling. The machinery you have been contemplating so intently must now be studied in its active living state, and it should be your earnest endeavour to find out its mainspring of action, and the influence by which it is maintained and governed.

To this end you will seek the aid of that all-absorbing and fascinating science, physiology. The study of physiology, like many other sciences auxiliary to medicine, is daily becoming more and more a subject of general interest. Although an imperfect science, many important problems relating to the functions of the animal economy have undergone solution, and if you may judge of the activity and earnestness which physiologists everywhere display in searching after new truths, more complete and precise knowledge of the conditions and laws of life must sooner or later ensue. At the present time a knowledge of physiology is being largely diffused by our teaching

schools, and there can be no doubt that it will sooner or later become a part of the education of all classes of society. It is right and good that man should understand something of the forces within him, and the relation of those forces to the outer world as a means of safeguarding his own health and prolonging life. Constituting as it does the chief element of rational medicine, it is to you indispensable. On a knowledge of healthy function rests the success of pathological inquiry. As Dr. Michael Foster has pointed out, "physiology is closely related to or even identical with pathology, and can no more be separated from it than meteorology can be divided into a science of bad and a science of good weather." Disease is no longer regarded as a material entity, or something to be dislodged from the body ere health can be restored ; but just as the gentle breeze may develop into an irresistible hurricane, and the trickling and fertilising rain into a deluging and destructive shower, so may the physiological states of the body pass imperceptibly into conditions which we recognise by the term disease, *i.e.*, a disobedient and disordered physiology.

This being so, it will be obvious to you that much requires to be known and understood of those "visible motions and invisible changes which go on in the body and constitute its life," ere you can recognise and appreciate the disturbing causes and processes of disease.

In seeking to become acquainted with physiological science, I would strictly caution you against the too common error of disregarding those elementary facts upon which much of the practical usefulness of the science mainly rests. A large amount of practical physiology may be found where it is the least sought after, viz., in the stable, the byre, the kennel, the fold, and the hospital ; there you may see and contemplate the experiments of nature uninfluenced by the mechanical, chemical, and surgical devices of the laboratory.

Here nature demonstrates her truths in her own truthful way, and to her inimitable teaching I would earnestly commend you. The high road to a knowledge of disease is through a knowledge of health. Betake yourselves, then, on every convenient occasion, to the places I have indicated ; note how the dog seizes his food with the teeth, the ox with the tongue, and the horse with his lips. Watch the brief chopping action of mastication in the one and the prolonged grinding action in the others. See how the ruminant leisurely returns the food to the mouth and repeats the process of mastication and insalivation. Watch the regular and ceaseless ingress and egress of air from the lungs, the force and frequency of the pulse, and note the accompanying sounds which flow from the chest as the result of the heart's beat. Consider the facts thus obtained by the light of your anatomical knowledge, and if you do not acquire a zest for physiological research in its higher aims and more complex methods, you are but little imbued with the spirit of science. From the study of anatomy, physiology, and chemistry, you will proceed to consider the most important branch of medical education, viz., clinical instruction.

Just as anatomy and chemistry are the foundation of physiology, so is clinical knowledge the foundation of practice. Inasmuch as practice is the aim and object of all your labours here, and the great secret of your success hereafter, you cannot too soon familiarise yourself with the phenomena of disease and the means to evercome and to prevent it.

In this connection you will experience golden opportunities and priceless privileges, and in all earnestness let me entreat you not to lose the one or abuse the other. You will now be called upon to apply the principles inculcated by your various teachers to the elucidation of all that concerns disease—indeed, to bring the knowledge you have acquired in the dissecting-room, in the laboratory, and in the lecture theatre, to bear on the recogni-

tion and interpretation of the phenomena pertaining to altered function and disordered structure.

The opportunities you will enjoy in this institution for acquainting yourselves with the methods of practice contrast in no small degree with those afforded to former students who, with myself, occupied the benches on which you now sit seventeen years ago. As you now find it, clinical teaching has only existed for a brief period. At the time referred to it was cold and fitful, desultory, and weak. It lacked besides the spirit and method, the depth and breadth, as well as the appliances and facilities which characterize the teaching of to-day.

Hospital practice, as it was then termed, was very much of the same description of occupation as that known as "walking the hospital" in our sister profession. Headed by the clinical teacher, so many of the students as felt disposed would promenade through the wards at very uncertain hours, on equally uncertain days. The result was that the art of medicine reached only those who were determined to pursue it.

It is satisfactory to know this is not so now, as many of you are aware. Recognizing the vast importance of this branch of your studies, I was induced a few years ago to direct the attention of the governing body to the necessity of a more extended and methodical system of clinical instruction, and to lay down the plan which is now so successfully followed. I am proud of having initiated systematic clinical teaching, because of the great good it is competent to effect, because without it the practical art of medicine has no existence.

At the present time our course is so framed that not one can escape the teacher's attention, none can remain ignorant except the most imbecile and perverse; all are trained to observe, to think, and to work, and to reason on the facts which are brought before them in their search after disease. Among other matters pertaining to clinical medicine you will be called upon to exercise your powers of investigating the medical history of our patients by examining and cross-examining their attendants. You will then pass on to the methodical examination of each physiological system of the body, in the course of which you will be instructed and drilled in the employment of all those mechanical appliances which from time to time have been designed for the purpose of enlarging our range of perception. The microscope, the ophthalmoscope, the stethoscope, the thermometer, and various other instruments of precision, will all at one time or another occupy your attention. Having collected your data and subjected them to careful analysis, separating those that are essential from such as are accidental, you will then be called upon for a diagnosis and afterwards to prescribe, and render your reasons for employing the medicinal agents you may select. From day to day you will review the history of the cases under observation and note their progress or recession.

This form of teaching will be supplemented by clinical lectures, when one or more of the various cases to which your attention has previously been directed will be brought before you in this theatre and submitted to a careful clinical analysis. The medical history of the case will then be fully examined. The physical and rational signs of disease will be grouped together in their physiological relations. The order and succession of the symptoms will be likewise noted, and their individual and relative importance pointed out. In this way the outward and visible signs will be made, as far as possible, to elucidate the nature and extent of the inward and invisible change. The pathological state having been defined, your teachers will then direct your attention to such other disorders as are capable of giving rise to the same prominent symptoms as the one under consideration, and at the same time frame a differential diagnosis for your guidance. The

therapeutic measures adopted will also be carefully discussed, and their success or failure indicated. Finally, on the clinical experience thus obtained an endeavour will be made to foretell or prognose the result of the case. This is briefly our method of imparting clinical information. But, gentlemen, clinical medicine can no more be taught by lectures than can anatomy be taught by diagrams ; and the most lucid demonstrations from the most gifted teacher will avail you little if you disregard your own intellectual training. If you desire to become good practitioners, as I sincerely hope you all do, your knowledge must be of that thorough and real description which personal investigation alone can make it.

The hospital wards should be your chief resort, and to learn your work efficiently you must see with your own eyes, feel with your own hands, hear with your own ears, and think for yourselves. Your first aim should be to acquire a knowledge of the natural history of the various diseases, *i.e.*, the characteristic course they take uninterrupted by art, and to estimate the modifying influence of age, sex, condition, occupation, season, climate, etc. This will not only prepare you for the endless variety which the same disease exhibits in different patients, but it will likewise enable you to estimate the gravity of the result, and to foreshadow impending danger ; or, on the other hand, to subdue unnecessary anxiety and alarm. It will, moreover, save you from embarking in those discreditable therapeutic ventures where success is impossible.

In commencing your clinical studies, let the first cases you take in hand be of the simplest description. Do not, as is too frequently the case, waste your time in endeavouring to solve abstruse pathological problems before you are well able to recognise the common signs of illness, but gradually proceed from the more simple to the more complex ailments, and in the former, as in the latter, let your inquiry be full, precise, searching, and methodical. If your immediate observations fail to satisfy you, as they often will, then seek the aid of the various mechanical, chemical, and instrumental devices by which a more intimate knowledge of your patient's condition may be acquired. In conducting your clinical inspections, let your note-book be constantly before you. Write down in simple language every symptom and sign of disease as they present themselves, and mark the period and nature of the changes which occur from day to day. "Watch with a questioning mind the administration of drugs, and in the events which follow take heed lest you set forth as their effects phenomena which belong only to the period or progression of the disease."

In all cases where death ensues follow your case to the *post-mortem* house, and there institute a searching examination of the body. Compare the morbid changes disclosed with the symptoms observed during life, and with the view you have formed of the seat, nature, and extent of the disease. Unless this be done you cannot hope to make real progress.

If you ask by what means all this is to be accomplished, I say our hospital and school are replete with all the requirements of a strictly scientific education, and afford advantages for real progress which are not to be found in any other school in the kingdom. Besides accommodation for over one hundred equine and other patients, the hospital is provided with hot-air and other baths, and a well-selected stock of modern instruments and appliances for the investigation and treatment of disease. In addition to the indoor patients, you will have an opportunity of seeing and studying the miscellaneous ailments of a large number of outdoor sick presented by the poor of this metropolis and by the subscribers to the College. Among them will be found accidents, disorders, and diseases of every type and character, and in every phase of their history.

In the school the characteristic features of to-day are the decidedly prac-

tical nature of the teaching and the facilities for the acquisition of real knowledge. Every one of you, from the moment you enter the school to the day when you depart from it, will be called upon to take a share in the practical work of the subjects laid down in the curriculum. Practical anatomy, practical chemistry, practical pathology, and morbid anatomy, practical botany, practical surgery—everything you engage in, indeed, is brought before you in a practical and mind-engrossing manner. Are not these, I would ask, golden opportunities? are they not rare privileges? do they not glitter with promise and irresistibly invite your sincere and zealous attention? Are they not worthy of all acceptation? It is well you should remember that your future labours will not be exclusively devoted to the business of doctoring, but in numerous instances will assume a decidedly educational character. As public servants, you must expect to be interrogated on matters about which your clients desire information for their future guidance. Your knowledge of the laws of health will be constantly appealed to in the discharge of your professional duties, and you will soon find how desirable it is to cultivate the faculty of imparting to others such useful information as will enable them to guard against disease. In this respect hygiene and sanitation, the sciences of health and preventive medicine, are subjects about which you will be the special teachers and guides of the stock-owners of the nation. The words of Rollet, "Medicine cures individuals, hygiene saves the masses," and the maxim of Hippocrates, "Nature is the healer of diseases," express wholesome truths not less applicable to animals than to man. The influence of food and water, ventilation and drainage, physical conformation of locality and geological formation, and of the habits and relations of animals, are among the many subjects concerning which you will require to enlighten those who seek your aid.

You need be in nowise apprehensive of inflicting upon yourselves any serious personal loss by instructing those who are accessible to sound teaching. Labour is not always immediately remunerative, but rest assured that wherever your precepts are found to be reliable there your practical skill will be most sought after. It is a feature in the life of our greatest men that they have risen to eminence in a great measure by the determined force of gratuitous labour, by that quality of mind which finds its highest enjoyment in the exercise of an unselfish and magnanimous spirit. Let, then, the aim of your life's work be to shed light abroad, to inculcate the teachings of science for the well-being of the brute creation, whom it is your mission to safe guard, and of the commonwealth whose interest is inseparable from it.

Dignified and important as the profession of veterinary medicine undoubtedly is, though it exacts the largest personal sacrifices from those who pursue it, it cannot be said to bring great rewards, either of rank or wealth. Peerages and pensions do not wait upon the labours of our young craft. If, therefore, honours and riches be the sole aim of any one of you, if you have no higher ambition than to amass wealth and to win the smiles of court, you had much better retrace your steps, and leave us in the undisturbed enjoyment of that sense of usefulness and elevation of character which we derive from the contemplation of natural science and the greatness and beneficence of our calling. If, however, the veterinary profession does not lead to the accumulation of large fortunes, no one, Sir Benjamin Brodie has said, "who uses the means proper for the purpose, will fail to succeed sufficiently to gratify a reasonable ambition."

I have endeavoured to show you in a very imperfect way how the science and art of medicine are to be wooed and won.

Let me, in conclusion, entreat you to cultivate and foster a genuine love of your profession, and an honest desire to duly fit yourselves for its success-

ful pursuit. Your parents, your teachers, and your school, actuated by a pure and lofty sentiment, are mutually resolved to afford you all the requirements wherewith to commence the responsibilities of your calling, and they ask through me in return that you will earnestly strive to render yourselves worthy of the sacrifice they so willingly make on your behalf. Bear in mind that the vocation you seek to follow is that of a gentleman, and appeals at every step to your higher nature and the discipline of your moral force. Cultivate the virtue and the truth of manliness, with all the attributes needful to a man. However great, or however humble, may be your intellectual attainments, add to them the power of goodness, integrity, consistency, and honour. Knowledge without character is like mind without heart, a goodly apple rotten at the core. Possessed of both, you are then rich indeed.

Thus far together we have travelled on, and now we part. Fare you well. If but one noble thought, one high resolve, one lofty purpose, or one heavenly aim hath been begot or nurtured by the page, we have not met in vain."

General BURNABY, in presenting the prizes, alluded to the improved and improving position of veterinary medicine in this country, pointing out that the Royal Veterinary College had furnished a large proportion of the members of the Royal College of Veterinary Surgeons who were now practising in every part of the British empire, and urging upon the students the necessity for education, and particularly a knowledge of the French language. He distributed the prizes to the successful students in the following order :—

Coleman Prizes.—Silver Medal, Mr. H. Sumner ; Bronze Medal, Mr. J. Sutcliffe Hurndall ; Certificates of Merit, Mr. C. J. Humphrey and Mr. A. H. Archer.

Cattle Pathology Prizes.—Silver Medal, Mr. C. J. Humphrey ; Certificate of Merit, Mr. H. Sumner.

Scholarship.—£25 per annum for Two Years, Mr. Ernest R. Butler ; very highly commended, Mr. Edward Taylor.

Class Prizes.—Class C.—Hippopathology, Mr. H. Sumner ; Cattle Pathology, Mr. H. Sumner ; Morbid Anatomy, Mr. H. Sumner ; Helminthology, no award, Mr. J. B. Gresswell commended. Class B.—Anatomy, Mr. J. Morton ; Histology, Mr. E. H. Hazelton ; Physiology, Mr. L. J. Blenkinsop. Class A.—Chemistry and Toxicology, Mr. E. Taylor ; Practical Chemistry, Mr. E. Taylor ; Materia Medica, Mr. E. Taylor ; Botany, not yet decided.

Army Veterinary Department.

Gazette, September 26th.

VETERINARY DEPARTMENT.—The Under-mentioned Veterinary Surgeons to be Veterinary Surgeons of the First Class.—F. C. Boulter, F. W. Going, S. L. Pallin, C. Phillips.

The *Army and Navy Gazette* has the following remarks regarding the recent campaign :—

"We learn that the health of the horses belonging to the force in Egypt has been remarkably good during the late campaign. With the exception of the losses caused by severe exertion under a 'roasting' sun, and the exhaustion produced by the same cause, and also the starvation they had to undergo through absence of forage, there has been nothing serious to report with regard to the horses from England. A number were killed, and more wounded, in the different engagements ; but the veterinary arrangements

appear to have been so well ordered, and the veterinary officers so efficient and zealous, that we believe the results, from a sanitary and medical point of view, will be most satisfactory. We wish we could say as much for the veterinary arrangements of the Indian Contingent. As usual, the Indian authorities seem to have overlooked the necessity for having a sufficient veterinary staff, or even for sending into the field animals free from those contagious diseases which soon play havoc. In fact, in Egypt we had Afghanistan repeated, and had the campaign lasted a few months longer, there is only too much reason to believe that the consequences of this neglect would have made themselves felt in a very unpleasant manner. The 6th Bengal Cavalry had Glanders among the horses when disembarked in Egypt, and when the regiment arrived at Ismailia, a troop in which the dangerous disease had caused the death of fifteen animals had to be sent back to Suez—*hors de service*—in order to prevent the infection spreading to the other regiments and corps. It would also appear that from lack of inspection previous to embarkation, the slaughter-cattle for the Indian force were infected with Cattle-plague: and notwithstanding the energetic action adopted when the disease was discovered among them in Egypt, it is feared that the native cattle may have become affected, and if so, the holders of Egyptian bonds will have little cause to thank the Indian Government. It is reported that for the care of 6,000 animals sent from India, there were only two veterinary surgeons ! "

A cavalry field-officer writes from Egypt to the same journal, as follows :— " I should like to say a few words in favour of the veterinary arrangements of the expedition. There will be a feeling of disappointment throughout the cavalry, unless the officers of the Veterinary Department receive, when the rewards are distributed, their fair share of 'honours.' It is not too much to say that the veterinary is the only department which has done its work properly, and it reflects no small credit upon the members of Mr. Meyrick's staff that they have been able to fight as they have done against the great difficulties which have had to be overcome. On the principle of giving credit where credit is due, I feel it my duty to express, on the part of all cavalry officers, their indebtedness to the Principal Veterinary Surgeon and his assistants."

Obituary.

THE death is announced of an old and respected member of the profession in London, Mr. JOSEPH WOODGER, M.R.C.V.S., who graduated in 1852, and died at the patriarchal age of eighty-two years.

The demise is also reported of Mr. PETER FINDLAY, M.R.C.V.S., of Glasgow, a graduate of 1865 ; Mr. J. B. MCGREGOR, M.R.C.V.S., of Crieff, Perthshire, a graduate of 1868 ; Mr. R. P. LORD, M.R.C.V.S., of Baltimore, who graduated in 1873 ; and Mr. H. O'S. KEYES, of Limerick, who was registered a member of the Royal College of Veterinary Surgeons in October, 1881.

Notes and News.

CATTLE DISEASE IN JAVA.—The island of Java has of late years been sorely troubled by cattle plague. It has prevailed to a disastrous extent in the western part of the island, where over 93,000 head of cattle were destroyed to prevent the spread of the disease during 1880. During the first half of the following year, notwithstanding this sacrifice, over 11,000 beasts died, and nearly 35,000 were slaughtered. Towards the close of 1881 a

marked improvement was noticeable, and this was attributed to the very stringent precautions taken by the authorities to prevent the disease going beyond the line to which it had crept up during the previous year. Two bamboo fences were erected right across the country from one shore to the other, at a distance of about two miles from each other, one fence being planted a short distance from the infected districts. The intervening space has been held by a strong civil and military watch, and all transport from one district to the other likely to convey contagion has been rigidly prevented, not even individual travellers being permitted to cross the cordon without undergoing a process of disinfection. The Netherlands Indian Government spent in preventive measures and in compensation for compulsory slaughter, 6,368,900 florins during the year 1880, and probably about the same last year. Java is fortunate in its elongated form, which, after a heavy loss, seems to have suggested the means of at least arresting the extension of the disease, and it is now hoped that it may be effectually stamped out.

FLUKE IN SHEEP.—Thousands of sheep died in Devonshire and Somerset two seasons since from fluke. The result is that the flocks have not yet recovered. At the commencement of last winter the Devonshire county veterinary surgeon, Mr. Heath, decided to experiment upon a flock, to see if by any means the disease could be combated. On October 13th, at a meeting of agriculturalists at Exeter, including Earl Fortescue, Lord Ebrington, M.P., and Mr. Acland, M.P., he gave the results of his experiments. He announced that they had been attended with success. It being admitted that fluke was developed in permanent pastures and taken into the system with the food, he turned out the flock in pastures that hitherto had been fatal to sheep. One half he allowed to feed their own way, but with the food taken by the remainder he every day mixed a quarter of an ounce of salt and half a pint of corn. On killing the uncared-for portion of the flock this summer, he found their livers full of fluke, so that they could not have lived another winter, whilst the sheep to which the salt and corn were given were perfectly sound. The greatest satisfaction was expressed by the large body of agriculturalists present at the success of the experiments.

DEVELOPMENT OF BACTERIA.—The researches of Pasteur and Darwin have shown how earthworms may aid the diffusion of small organisms, some of which may produce disease. Professor Schnetzler states that the dejections of earthworms always contain numerous living Bacteria and their germs (the hay Bacterium included). It is clear that Bacteria in enormous quantity float in the air about us; and we have at easy command, Professor Schnetzler points out, a small apparatus traversed by about 8,000 cubic centimetres of air per minute, which may inform us as to these floating germs. This is no other than the nasal cavity, on the mucous surface of which air-particles are deposited. To observe these he advises injecting the nose with distilled water (completely sterilised), by means of a glass syringe previously calcined. The liquid so obtained is put in one carefully cleaned watch-glass, and covered by another. With a microscope magnifying 700 or 800 diameters, one finds, among various particles in the liquid, some real live Bacteria. If the liquid be kept a few days in a clean glass to be hermetically sealed, the Bacteria are found to have increased very considerably. One sees *Bacterium termo*, *Vibrio*, *Spirillum*, *Bacillus subtilis* even some *infusoria*, and spores and fragments of fungi. Professor Schnetzler has further successfully cultivated the organised germs by means of a mixture of gelatine and distilled water. Why do not those Bacteria in the nasal cavity always multiply and develop, and penetrate to the windpipe and lungs? Their progress is doubtless opposed by the vibratile movements of the cilia, or minute hairs of the epithelium covering the mucous membrane of the air-

passages, and the feeble alkaline reaction of the nasal mucus may, it is also suggested, be unfavourable to some of them. Cohn has proved that Bacteria giving rise to acid fermentation perish quickly in liquids having an alkaline reaction. Infectious Bacteria may, however, multiply to a formidable extent on living mucous surfaces ; witness the growth of the *micrococcus* of Diphtheria, brought by the air into the air-passages ; also the Bacterium of Anthrax. The Bacillus of Tubercle, as Koch has lately shown, may be transmitted from one person to another by the air-passages. Professor Schnetzler is of opinion that Hay-fever may also be due to Bacteria entering the nose. While the development of Bacteria on normal mucous surfaces is usually limited, millions of them are found in the dejections of healthy children.

TESTIMONIAL TO MR. HUTCHEON, COLONIAL VETERINARY SURGEON, SOUTH AFRICA.—We are extremely gratified to learn that the agriculturists of the Bedford and Adelaide districts in the Cape Colony have presented Mr. Hutcheon, M.R.C.V.S., Colonial Veterinary Surgeon, with a valuable microscope, a gold cup, and a watch, in testimony of his great services since his arrival, and more especially in recognition of his successful efforts in suppressing the epizoöty among the Angora goats, and which threatened at one time to exterminate these important animals. At the complimentary dinner given to him in Adelaide, at which the presentation took place, well-deserved praise was awarded him, and high encomiums passed as to his ability and zeal. Our colleague must be congratulated on the remarkable success he has so soon met with in Africa.

THE FORTHCOMING INTERNATIONAL VETERINARY CONGRESS AT BRUSSELS.—Mr. Fleming, Army Veterinary Inspector, has been appointed by the Organizing Committee of the International Veterinary Congress, which meets at Brussels next year, to prepare a report in association with M. Lydtin, Superior Veterinary Surgeon to the Grand Duchy of Baden, on Tuberculosis, from a pathological and sanitary point of view ; this report is to serve as a basis for the discussion which is to take place on this malady.

A HORSEMAN'S KNIFE.—Our colleague, Captain Hayes, has devised and patented a knife which will be found useful by horsemen and veterinarians, as an every-day article of equipment. Without being too large or heavy for the pocket, it contains, in addition to other essential articles, an excellent searcher, which will render the contrivance still more acceptable to members of the veterinary profession. The knife is strong and well-finished, the handle being nickel-plated. It is made by Young, cutler, Edinburgh.

OXYGENATED WATER.—Experiments have recently been made in Rome by Signors Capranica and Colasanti, which are referred to in *Nature*, regarding the action of oxygenated water on the system. Physiologically absorbed (according to Hueter's method), the substance acts as a poison, quickly killing animals, the fatal dose varying with the animal's size (about 25 cc. is enough for a dog weighing three kilogrammes, 75 cc. for one weighing 13 kilogrammes. The poisonous action appears in all the great functions of the body, especially that of the spinal cord ; the exito-motor power of that organ is overexcited, as shown by convulsive phenomena (tetanus, and locomotor ataxy). The physico-chemical acts of nutrition are also profoundly disturbed, as is proved by the very pronounced glycosuria previous to death. All these disturbances are attributable to decomposition of the peroxide of hydrogen in contact with the tissues. The consecutive phenomena in poison with oxygenated water are identical (the authors say) with those M. Bert has observed as resulting from the action of the compressed oxygen.

Correspondence, etc.

THE INTERNATIONAL VETERINARY CONGRESS: FOURTH SESSION.

HONOURED COLLEAGUE,—Nearly twenty years have elapsed since Professor John Gamgee, of Edinburgh, issued the first invitation for an international reunion of veterinary surgeons. This reunion took place at Hamburg; and at it was discussed the necessity for certain sanitary police measures with which to oppose Cattle Plague and Contagious Pleuro-pneumonia, as well as drawing up a list of the various diseases which should be the object of special arrangements. At this first assembly it was also decided to draw the attention of the different governments to the utility of a sanitary supervision of travelling droves of domesticated animals, and to the advisability of receiving reports from competent persons, as to the outbreak and termination of panzoötic diseases, as well as all contagious disorders. The Congress was, in addition, occupied with a consideration of the measures to be adopted against Sheep-pox, and on this occasion the value of inoculation in that disease was discussed. In terminating its labours, this assembly expressed the desire to see published statistical information concerning the different panzoöties, and it decided that another international reunion should take place at Vienna in 1865.

On March 30th, 1865, the organising committee of the second session of the Congress published its programme. This comprised :—

(*a*) The continuation of the discussion relative to the necessary duration of an efficacious quarantine, and the measures applicable to the offal of animals, in order to prevent the invasion of Cattle Plague.

(*b*) Examination of the disinfection measures applicable to waggons and ships which have carried cattle, and the determination of a uniform system of cleansing to be adopted in the different countries.

(*c*) Study the causes of Rabies, and ascertain the results obtained from certain measures with a view to prevent the transmission and development of this malady; as well as the eventual determination of general regulations against the malady.

(*d*) Examination of the laws respecting unsoundness in animals, and fix on the bases of international legislation with regard to them.

After discussing these, the Congress adopted the principles which ought to serve as a basis for the regulation of all these points in the various countries. These principles will be found, in the form of appendices, in the report of this second international reunion which, before separating decided that a third Congress should be held at Zurich, in September, 1867. This new Congress, which assembled on the second and sat until the eighth of that month, discussed the following subjects :

(*a*) Experiments and information relative to Cattle Plague during the two previous years, and their influence on the prevention and suppression of this malady.

(*b*) Relations of contagious Pleuro-pneumonia to other forms of Pneumonia, and the measures for combating the former of these affections.

(*c*) Inspection of meat.

(*d*) Veterinary education.

(*e*) Organisation of veterinary service.

The first and the three last of these questions was submitted to a long discussion, the result of which were resolutions or principles, a *résumé* of which is given at the end of the report of the proceedings of the session. With regard to the second of these questions, the Congress, through insufficient time, was compelled to formulate the principle that " Pleuro-pneumonia

should, with regard to sanitary police measures, be considered as only propagated by contagion."

A fourth international Congress of Veterinary Surgeons should have been held at Brussels in 1870.

Three members of the Zurich Congress were entrusted with its organisation ; but circumstances beyond their control prevented them carrying out this intention.

The Congress of 1883 will, late though it be now, carry out the wishes of that of Zurich. The committee formed to organise it has considered it advisable to connect this new international assembly with the one preceding it, and it believes that it cannot do better, in drawing up a programme, than take up the question which could not be discussed by the Zurich meeting ; and it all the more readily adopts this course, from the fact that the question as to the differential diagnosis and the prophylaxis of contagious Pleuropneumonia, no matter by what means, maintains all its importance. In accepting this question, with the other subjects for discussion at the Congress, the commission has otherwise conformed to the wishes expressed by several of the adherents of this Congress, in their reply to the circular in which they were requested to indicate the questions they desired to have discussed at the new assembly.

Having regard to the exigencies which have arisen since the decision of the Zurich Congress, and to the desire expressed by several veterinary societies, as well as by a number of practitioners, the Commission has considered it useful to again call attention to the wishes expressed *à propos* the fourth and fifth questions in the programme of this Congress (see the end of the present circular); and it has considered it necessary to act thus, not only from the motives already indicated, but also because that—so far as these wishes are concerned—in several countries they have remained more or less a dead letter. A new examination of the wishes relative to instruction and to veterinary organisation appears all the more opportune, inasmuch as the Zurich Congress left altogether on one side the general and international part of this organisation.

The international regulations with regard to practising veterinary medicine—at least on the frontiers—is included in the general wish ; but it necessitates the preliminary organising, in all the contracting countries of equal instruction.

The organising of an international service for affording prompt information, by special correspondence, the drawing up of statistics, etc., calculated to make known the sanitary condition of the domesticated animals, the supervision of disinfection and means of transport, in their relations to veterinary sanitary police, etc., are all so many questions which are certainly not foreign to a good organisation of this service.

The discussion of the fundamental principles of a good inspection of meat, and also of uniform legislation with regard to soundness, should also figure in the programme of the Congress of 1883, if these questions have not been amply discussed in previous Congresses.

The organising Commission of the future international assembly has thought it its duty to draw special attention to a subject which is related at once to the alimentary hygiene of man and the preservation of certain of the domesticated animals. This subject which at least touches in one way on the inspection of meat, is related to the measures of sanitary police with which to combat Tuberculosis (*Phthisie pommelière*).

In taking for its basis the preceding considerations, the Commission has drawn up the following programme for the fourth session of the International Congress of Veterinary Surgeons :

1. Is there any reason to modify, in any way, the principles and resolutions

arrived at by International Veterinary Assembly at Zurich, relative to the teaching in veterinary medicine?* In the affirmative, what are these modifications?

2. What are the ameliorations which might be usefully introduced into the present organisation of everything relating to the veterinary service, as much with regard to special regulations in different countries, as with a view to international necessities.†

3. What are the characters which establish the differential diagnosis of Contagious Pleuro-pneumonia, and what are the measures necessary to prevent the development and propagation of this malady?

4. What is the part played by contagion and heredity in the development and propagation of Tuberculosis, and what is the influence on man and animals of the consumption of the flesh and milk of animals affected with the disease? What are the means to be adopted to prevent the development

* Principles and resolutions adopted by the Congress at Zurich, with regard to the organisation of a Veterinary Organisation by the State :

A Veterinary Organisation cannot attain its object unless it fulfils the following conditions :

1. The practice of veterinary medicine should be regulated by law.

2. Veterinary medicine should be an integral, but independent branch of the Sanitary administration.

3. It should be represented by competent persons in connection with the inferior, middle, and central authorities.

4. None should be allowed to practise veterinary medicine except those who have undergone the regulated studies in a public veterinary school, and who have received —after examination—the diploma or legal position of a veterinary surgeon. Such alone should receive this title.

5. Every veterinary surgeon may be employed as an expert by individuals, but the judicial authorities should only employ as competent persons officially recognised veterinarians.

6. In the case of Sanitary police, the administrative authorities should only exceptionally employ others than those officially recognised as competent.

7. Every veterinarian should have the right to supply the medicines necessary in his practice, but under proper control.

8. The expression " Competent person " should only imply diplomated veterinary surgeons.

† Principles and resolutions adopted by the third International Veterinary Congress, with regard to instruction :—

Organisation of schools, their union with universities or other teaching establishments. Preliminary instruction. Development of studies.

1. The preparatory education for the study of veterinary medicine should be as extensive as that required for the study of human medicine. It is desirable that, without delay, the same amount of preliminary knowledge should be possessed by candidates for admission to the study of veterinary medicine as for entrance to the universities. But inasmuch as, for various reasons, in the present state of affairs this cannot be demanded, the Congress has decided that the minimum of this knowledge to qualify for entrance to veterinary studentship should correspond to the second examination imposed for admission to a university.

2. Three years at least are necessary for the special studies of veterinary medicine. There should not be different classes of veterinary surgeons, according to their different degrees of instruction.

3. The veterinary schools may be separate, autonomous establishments, or be joined to universities or other establishments for superior education ; but veterinary medicine should be taught in special chairs. Disapproval must be expressed as to the institution of a university chair in which only one professor forms veterinary surgeons, as this mode of instruction is absolutely insufficient.

4. This necessary organisation of veterinary teaching should be adopted, wherever veterinary medicine is conveniently established.

and transmission of this affection, as well as the pernicious influence of the milk and flesh of diseased animals, if this influence is real?

Receive, honoured colleague, the assurance of our most distinguished sentiments.

A. THIERNESSE, *President* { *Of the Organising*
DR. WEHENKEL, *Secretary* { *Commission.*

Brussels, *1st September.*

IS SYSTEMATIC TRADING IN HORSES COMPATIBLE WITH THE CALLING OF VETERINARY SURGERY?

SIR,—This "silly mania" of mine, courteously so-called by a high authority a short time since, has now possessed me for the space of twelve years, and as very recently our respectability as a body has been publicly assailed by the conduct of two of our members, I trust you will agree with me that the time has arrived when this (sad to say) vexed question is for ever set at rest by a thoroughly honest opinion being given as to its propriety.

Allow me to make two uncompromising statements; firstly, that it is largely carried on, in some form or other, by many of our members; secondly, that it is supported by argument and held to be consistent by many others holding the highest positions and titles.

The questions raised in my mind are the following:—Is ours a trade or a profession? Can its members consistently conduct both? Is not the animal machine of such a complex and changeable nature as to deter common honest sense from trafficking in, or from being liable for anything beyond a conscientious opinion as to the state of its health? Does the practice of horse-dealing harm the profession in public estimation? Is the moral teaching of our schools to be set at nought? Are the highest aspirations which are then felt to be afterwards thrown aside or replaced by baser and more sordid views? Are all the noble attempts to raise our calling to a scientific appreciation to be thwarted by the selfish greed of gain? Is all sentiment in the intellectual welfare of veterinary medicine mere balderdash, and is school philosophy to be set aside in the battle of life, to be cast off at pleasure as a useless conception, or only to be tolerated as a hypocritical cloak for assumed importance? Nay, rather, should not all the moral etiquette in our composition be used as armour to defend us from the many temptations that come to us individually, and to protect our profession from the assaults of the vulgar? Of course, all respectable veterinary surgeons carrying on trade will repudiate, with scorn, being classed with such men as have lately figured in the police-court; but are they free from the taint? Do they not sully the name? Would they like to own at a social or scientific gathering that they trade in horses? In short, are they not ashamed of what they do? If they are not, *chacun à son goût!* but let them be consistent, if they can, and not usurp the rights which only belong to purely professional men, or seek to legislate for the advancement of a calling which, to them, can be looked on as a mere means of gain. The social ostracism that surrounds us will never be cleared until this degrading incubus is got rid of; for so surely as the veterinary surgeon is the trader, half-trader, middleman, or what not, so surely will he be looked on with suspicion by the public, and the profession he represents be classed as third-rate.

The public, as an author in your journal once quoted, are prone to appreciate a man at the estimation in which he holds himself, and if he stoops to the level of the horse-dealer, he, lacking proper pride, sinks, and we as a body are sufferers.

I fear I shall bring a hornet's nest about me for these remarks, and probably be accused of feeling pique; but it is a mournful regret, not unmixed with disgust, that prompts me, in however such an insignificant manner, to agitate in what I consider to be the direction of reform. Besides which, I think it is highly discouraging and unfair to those who seek by all the means in their power to raise the tone of veterinary surgery, that they should be frustrated in their endeavours by impediments in "high places."

"You cannot hope to educate the masses; such a course will only bring disappointment and beggary to yourself," was another principle lately sought to be infused into my mind. But surely each individual can, by showing his distaste for all that is unprofessional, do his little to impress the masses, whether they be of his own occupation or not, with the idea of honesty of purpose; and I can only hope that many of my brethren share my views; at the same time, I trust I am not too severely wounding the sensitiveness of those who think and act differently.

I leave it, Mr. Editor, to your impartial judgment to determine as to the publishing of this letter, and remain, yours obediently,

63, South Audley Street, W. HENRY DYER.

Oct. 10th, 1882.

ANSWERS TO CORRESPONDENTS.

M.R.C.V.S.—The period for registration of existing practitioners expired on August 27th last.

J. F. MURRAY, TRALEE.—Blistering the coronets in acute Laminitis is decidedly contra-indicated, as it will most probably be followed by very serious results.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. A. Nunn, A.V.D., India; Major-General Sir F. Fitzwygram, Bart.; H. Dyer, London; J. C. James, Thornbury; J. Clark, Coupar Angus; J. W. Axe, London; J. Woodger, London; A. Broad, London; J. J. Sperring, Dublin; J. F. Murray, Tralee; A. E. Macgillivray, Banff; R. F. Frost, A.V.D., Rangoon.

BOOKS AND PAMPHLETS: *J. Mandel*, Du Sacrifice des Animaux de Boucherie; *E. Strasburger*, Ueber den Bau und das Wachsthum der Zellhaute; *C.* and *P. Petersen*, Forschungen auf dem Gebiete der Viehaltung und ihrer Ergebnisse; *J. Woodroffe Hill*, Bovine Medicine and Surgery; *C. Müller*, Die Verbreitung der Ansteckenden Thierkrankheiten in Preussen Während des Quartals April-Juin, 1882.

JOURNALS, ETC.: *Journal of Anatomy and Physiology; Nature; Clinica Veterinaria; American Veterinary Review; Annales de Médecine Vétérinaire; Journal de Médecine Vétérinaire et de Zootechnie; Recueil de Médecine Vétérinaire; Der Thierarzt; American Live Stock Journal; Wochenschrift für Thierheilkunde und Vichzucht; Kennel Review; Australasian Veterinary Journal; La Presse Vétérinaire; L'Echo Vétérinaire; Archives Vétérinaire; Live Stock Journal; Revue Vétérinaire; Repertorium der Thierheilkunde; Medical Press and Circular; Lancet; Proceedings of the Medical Society of Kings; Edinburgh Medical Journal; Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie; British Medical Journal.*

NEWSPAPERS: *Bedford (Cape Colony) Guardian; Adelaide (Cape of Good Hope) Opinion (3 copies); Dublin Evening Telegraph; Darlington News and Stockton Times; Sport; Irish Sportsman; The Colonial (Picton) Standard; Montreal Gazette; Sporting Gazette; Lahore Civil and Military Gazette; Rangoon Times.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

DECEMBER, 1882.

IODIFORM IN DISEASE OF THE MAXILLARY AND FRONTAL SINUSES.

BY A. H. SANTY, F.R.C.V.S., NORWICH.

I SEND a few remarks on the use of Pulv. Iodoformi Co., which may be of interest to some of the readers of the VETERINARY JOURNAL. I have had a number of cases of Nasal Gleet, arising from various causes, and have on several occasions trephined the frontal and superior maxillary sinuses, and injected with dilute carbolic acid in the first instance, and after a time with a mild solution of nitrate of silver, or sulphate of zinc. In the majority of these cases I have effected a cure, in a period varying from one to three months. I am of opinion that Pulv. Iodoformi Co. is a most valuable agent, not only as recommended for nasal discharges, but also in certain kinds of wounds, especially where there is diseased bone. I have seen the best results ensue when other agents have failed, by introducing the powder into such a wound every other day with a probe. It may not succeed in every case of Nasal Gleet, that depending mainly on the cause, for it will not remove the diseased fang of a tooth; but where we have a diseased condition of the mucous membrane of the sinuses, and perhaps of some of the delicate bony structures of the head, I believe it will cause healthy action to take place. Certainly it is worth a trial by every practitioner before resorting to the lengthened mode of cure by trephining. I have used the Pulv. Iodoformi Co. in several cases, and in some upon which I had operated (trephined), and have always thought it assisted the

cure, but did not until lately give it the credit to which I think it is due.

About six weeks since, my attention was directed to an aged cart-horse, with an offensive muco-purulent discharge from the off-nostril. I carefully examined the teeth, but could find no disease; the horse had no fever, no catarrhal symptoms, appetite good. On percussing the region of the frontal and maxillary sinuses, this evidently gave pain. I thought it the most marked case of Nasal Gleet I had seen for some time. I told the owner I believed the only cure would be an operation (trephining the sinuses); to which he demurred, saying the animal was not worth the time and expense. I then said I should like to give a new remedy for such cases a fair trial, explaining it to him. This he consented to, and I at once commenced injecting about a drachm of the powder with the insufflator every morning, at the same time prescribing a drachm of the sulphate of iron, to be given in the food night and morning. After a few days the discharge altered in character, becoming thicker, of a better colour, and less fœtid. This improvement continued every day without a check; at the end of fourteen days I discontinued the treatment, and ordered the horse to work, there being no discharge at all. It has been at regular work ever since, and without any return of the discharge.

These few imperfect remarks might induce some other practitioner to give it a trial in a similar case, and I trust with the same success.

LOODIHANA FEVER IN INDIA.

BY J. A. NUNN, M.R.C.V.S., A.V.D., ON SPECIAL DUTY IN THE PUNJAB.

ON the 18th September, while marching through the Rawul Pindee district, I was met at a place called "Tuttee" by a native who is a large landowner, and who has to a considerable extent gone in for horse-breeding. Hearing I would return on the 20th, he promised to collect his mares and young stock for me to see; for, contrary to the usual native custom, which is, to

keep animals tied up by head and heel-ropes, this man allows his stock to run free on a large portion of his land which is unfit for agricultural purposes, only taking them up when necessary from stress of weather. On my return on the 20th, he told me that he had collected his animals from the district, but that on the 18th, while he was away from home, two of his brood mares had died, and that another and a yearling filly had been ill since the 17th. I at once went with him to the place in which the animals were, and found the mare in a moribund condition, suffering from Loodihana Fever (Anthrax); in fact, she fell down dead while I was looking at her. The filly was also suffering from the same disease, but in a much milder form. I gave the owner directions as to the treatment of the filly, the disposal of the carcase of the mare, and the disinfection of the yard; also the removal of two other mares who had been in contact with the diseased ones. The symptoms I observed were those that are usually described as characteristic of the disease, and I shall not enter into a description of them; but what appears remarkable about the case, is that these animals were allowed to run loose in a perfectly natural state, and were born in and had never left the district, which is a high-lying, dry, sandstone formation, with deep ravines caused by the rain, at the bottoms of which there is a scanty growth of grass. The country is but poorly cultivated and thinly populated, the villages lying far apart, and is indeed almost a desert. The only way in which I can account for the outbreak is that on the 13th, 14th, and 15th, a very heavy rainfall had taken place, and during these three days the animals had been confined to a shed that was flooded; and the floor, being clay, had absorbed the rain-water, urine, etc., on which the heat acted when the rain ceased. I believe at one time it was supposed that "Loodihana Fever" only attacked imported animals, and those that were kept in an artificial state; and I am induced to forward this account of the above outbreak, as I am not aware that the disease has ever been recorded as having occurred amongst animals living in such a perfectly natural condition.

VOMITION IN THE HORSE.

BY J. MOIR, M.R.C.V.S., ARMAGH.

I SEND the following case, deeming, from its remarkable features, that it may be worthy a place in the Journal. An aged cart-horse, which was previously in good health but out of work for a few days, had received his usual morning feed; this consisted of gelatinised oatmeal, prepared by maceration in cold water, then boiled. The animal was observed to be (this morning) somewhat duller than usual, when suddenly he manifested symptoms of spasm (intestinal), with the expulsion of gastric contents through his nostrils. Soon after this period I was called in to see the animal. I found the symptoms so intense that it screamed from pain, its appearance being pitiful and hideous; in short, its form resembled that of the camel—most markedly so in the head and neck, the latter being, by the œsophageal contraction, drawn to the left side. These symptoms continued with but little intermission for twenty-four hours. The medical treatment, taken for granted that it was proper or not, as will be seen requires no particular mention, only I found that the giving of curative agents in a liquid form was nullified in action by a quick repulsion through the nostrils. The administration of them in solid form (bolus) offered some chance of effect, as I could not recognise any fragmentary evidence of their being cast out in the nasal discharges; but, after all, if they became dissolved in the stomach, it is doubtful if their entrance into the system, like their stay in the former locality, was not promptly refused. Under these circumstances I felt powerless to correct the reversionary functions of nature, and came to the conclusion that it was better to encourage it by drenching repeatedly the patient with soapy water. In this course I was strengthened the more, as the animal had withstood the enemy so long, and this led me to hope that all was due to functional derangement, not organic lesion.

The amount of food, etc., voided per nostrils, speaking guardedly, could not have been less than four stable pailfuls; the stomach could not have half contained it; therefore the major portion was pumped up from the intestines.

Contrary to anticipation, the animal showed a decided improvement on the third day, and on the fourth a return to its usual good health, but with an empty and reduced carcase. Comparing this case with others I have met with in the horse and cow, but of a milder and more transient form, which readily gave way to treatment, and in nearly all of which the apparent cause was the same, viz., the giving a mixed soup-like drink, or poultaceous mash, causing by quantity and quality indigestion, with derangement of the stomach. Although having notes on Vomiting produced by other causes, as this closes my narrative and as I have already trespassed too far on space, I shall reserve observations I have to make for a future time.

NERVES AND SENSATION, OR MATTER AND MOTION.

BY W. J. MASTERS, M.R.C.V.S., LATE R.A.

AS matter and motion form the substance and sum of all human knowledge, the known universe consists of matter of various degrees of property and motion, and, consequently, nerves and sensation are modifications of the same.

The molecules of matter are constantly changing, but not always with the same degree of rapidity, and they cannot be permanently arrested or annihilated. The degree of motion depends entirely upon the relative condition of the different kinds of matter. Varieties of matter possessing dissimilar properties are called elements, and these are classed according to their differences. The modes of motion are called light, heat, sound and electricity. Chemical action and physical changes result from these modes of motion, and they are all known to the mind through the action of the sensory nerves. Light is said to be due to "*undulations of ether;*" heat to "*waves of caloric;*" sound to "*vibrations of matter;*" and electricity to a "condition of matter in relation to the condition of other matter," one kind of matter possessing *something* of an opposite character to something possessed by the other. These

two somethings are called positive and negative electricity, their mutuality (producing a neutralization of condition of the matter) forms the electric current or fluid. Electricity is therefore literally the *language of matter*, as it expresses *being* and *doing*, which is the essential of all language. All matter *is* and *does*, or exists and moves, that forming man being no exception to the rule. His brain exists and thinks while life lasts, and afterwards returns to its former condition. His thoughts vary according to the degree of the movements of the brain and nerve matter,—*i.e.*, sensation results from change in the matter, and sensation leads to thought or action, all really expressing being and doing. The brain, the centre of sensation, consists of a variety of the elements of matter, formed into cells analogous to galvanic cells. The sensations resulting in the brain cells alone do not cause consciousness, as they take place during sleep as well as at other times, but they undoubtedly occur and result from the change taking place in those cells or elements of matter, just in the same way that electricity results from the change in condition of the matter of which the cells of the battery are composed. And this must necessarily be the only motion or sensation belonging to the *brain proper*. The brain is, therefore, precisely the same kind of mechanical machine, if it may be so called, as the galvanic battery made up of galvanic cells, and bears exactly the same relation to a galvanic battery as one battery bears to another. And during sleep it represents a battery detached from its telegraph wires or nerves. All the ganglia of the nervous system have precisely the same properties as those described as belonging to the *brain proper*, varying only in degree of power according to their size and quality. Nerves are the conducting media of the positive and negative somethings that cause sensation, and in this resemble telegraph wires. Collective sensation, called thought, necessarily cannot originate within the brain, as *all knowledge is by experience*, and every sensation of which the mind is cognizant depends upon the condition of one or more of the five sensory nerves. These nerves are commonly known as the senses of sight, hearing, smell, taste, and touch. To recapitulate: all we know of the mind is that it consists of collective thought depending upon

the relative condition of the brain and nerves and the matter outside the brain, and not originating within the brain. The *material* mind may, therefore, be defined as—a condition of brain and nerve matter depending upon a condition of other matter situated without the brain, motion being the expression of that condition. It is consequently identical with electricity; and it necessarily follows that *light*, *heat*, *sound*, *odour*, and *taste*, result from one and the same cause, varying only in degree, and that cause *motion of the molecules of matter* producing *undulations*, *waves*, or *vibrations*, of various degrees of velocity, light being the quickest that we can measure, the others resulting in the following order,—heat (the vibrations producing the sensation of heat are quicker than those causing the sensation of sound), sound, odour, and taste, producing all the innumerable varieties of sensation experienced.

This appears to me to be the only explanation of chemical affinity and all the physical phenomena known to us.

NOTES ON HILL'S "BOVINE MEDICINE AND SURGERY."

A Reply to A. E. Macgillivray, by the Author.

Mr. Macgillivray's review of the above work being *unsolicited*, must be my excuse for an answer.

Though far from averse to criticism, I think I may venture to observe that the critique in question will be considered by persons conversant with such matters *a display of questionable taste.*

I am glad Mr. Macgillivray agrees with the dedication, notwithstanding his perceptible sneer that I should have quoted so often from the brightest literary star our profession contains.

Concerning the quotation on Tubercular Stomatitis, nothing was further from my mind than an intentional ignorance of the origin of the said quotation; indeed, a reference to the last paragraph on p. 153 should convince even Mr. Macgillivray that I have no desire to hide his light under a bushel.

In the last paragraph of his critique, Mr. Macgillivray falls into

a trap of entirely his own making, and the reason given for his disappointment is childish in the extreme; because if he will refer to the specimen circular sheet, one of which I understand was sent to every member of the profession, he will find the "illustrations" applied to the book, *independent* of the appendix, and were *never* advertised as belonging to the latter prior to its publication.

No reasonable man could expect an appendix of thirty pages, and on such a subject, to be copiously illustrated with "woodcuts and coloured plates."

No one will welcome another work on Bovine Pathology more than the author of the one which has not come up to Mr. Macgillivray's expectations, and if that gentleman will use his literary ability in this direction, I shall be pleased to enter my name as a subscriber—plates or no plates—and not even excepting the unintentional transposition of the title by the publishers, of which I was not aware until pointed out and made so much of in this *unsolicited* critique.

Finally, I have at all events the pleasure of thanking Mr. Macgillivray, on the part of my publishers, for the compliment paid to them in the first two lines of his critique, and at the same time to assure him it is neither their intention, nor the author's, to deprive him of the proverbial "bit o' siller" if he desires to return his copy of the work.

N.B.—Since writing the above, I find Mr. Macgillivray was a subscriber for my work, and had his copy at subscription price, and therefore knew perfectly well when he wrote his critique that he had *not* bought the book on the advertisement of a copiously illustrated appendix. I regret the necessity of this *exposé*, but truth is truth, and had Mr. Macgillivray borne in mind the old proverb that "error is always in haste," he would probably have thought twice before he raised an accusation against an advertisement which appeared *after* he had purchased his book. "Error, hough blind herself, sometimes bringeth forth children that can see."

ANTHRAX IN CACHAR AND MANIPUR, INDIA.

BY J. GRIFFITH EVANS, M.D., ARMY VETERINARY INSPECTOR, MADRAS.

(*Continued from p.* 308.)

"The Chatla Fen plays so important a part in the physical geography of Cachar, that an account of it as it appears in the rainy season, and of the land-making process which is steadily going on in its swamps, may not be found uninteresting. The Barak river enters Cachar from the east as a considerable stream, overcharged with silt, and in its course through the district it receives the torrents from the Naga hills on the north, and the Lushai territory on the south. As soon as the periodical rains set in, both the Chatla and the Hailakandi Valleys turn into swamps. For a time they manage to discharge a good deal of their water into the Barak; but as this river receives its freshes from the eastward, it rises above the level of the two valleys, and instead of relieving them of their drainage, pours its own floods into them. Its rise and fall are so sudden, that within twenty-four hours the direction of the water changes, and the current which in the morning was streaming out of the marshes into the river, comes rushing back before night. The outward stream is of the clear brown colour of marsh water, which is charged, indeed, with organic matter, but has deposited in the swamps *en route* whatever silt it brought from the Lushai hills. On the other hand, when the Barak rises above the level of the fen, it sends a thick muddy torrent out of its main channel heavy with silt, and the colour of pea-soup. The inundation spreads over the vast expanse, swelling the marshes into a wide and deep lake, from which rise little conical isolated hills, with trim rows of tea-bushes on their slopes, the coolie lines half-way up, and the planter's neat mat cottage on the summit. Everything else is submerged, except here and there a grove of *higil* trees, whose dark green tops stand up like laurel bushes above a depth of fifteen feet of water. As long as their highest branches can breathe the air, these trees will bear any amount of inundation. When the river subsides, the stream again turns from the fen into the Barak. But, meanwhile, the muddy river water has

deposited its silt, and gradually passed through a pale straw colour into a light or deep brown. It leaves behind it a layer of fresh slime, and by innumerable repetitions of this process, the bottom of the fen gradually rises. The fishermen say that in some places the depth of water in ordinary floods decreases at the rate of eighteen inches every ten years. The process of land-making thus goes on age after age, the lakes gradually shallowing into fens, the fens into reedy swamps, and the swamps into marshy prairies, covered with coarse grass. At present the Chatla Fen exhibits the process in all its stages. It now contains about sixty deep pools, in which the filling-up stage has not yet gone far enough to admit even of the longest-stemmed aquatic plant rising to the surface. These pools, the fishermen say, were formerly ninety in number, but many of them have passed into the fen stage, and almost all of them have grown shallower within the memory of a single generation. Meanwhile, the shallow marshes slowly rise up into dry land, offering rich crops for the most careless tillage. At the end of the rainy season the dry land emerges in mud and wild disorder. As far as the eye can reach, all is unformed chaos; one might expect to see a megetherium, or other vast pre-Adamite monster, slide down some slimy bank into the quagmire. . . . . In the cold weather the ground is broken up by cracks, ravines, beds of silted-up rivers, muddy holes, and quagmires."

The hillocks of this region, called *tilas*, which divide the fens, and upon which the tea is cultivated, are formed of conglomerate gravel, and a fine sandy mould. "The tea plant requires for its suitable growth land upon which stagnant water may not lodge around its roots, and which is not subject to frequent inundations; and, therefore, tea gardens are necessarily situated on elevated land, the soil of which should be of a porous description. The hilly lands (on the plains) in Cachar almost invariably consists of this class of soil, which is of a slight reddish colour and is composed generally of about one-third porous clay and two-thirds finely-divided sand. The soil of the plains surrounding the hillocks and plateaux is altogether unfit for the tea plant, as it contains a very small proportion of sand, and does not allow water to percolate readily through it."

12. *Importance of the above Description.*—The fact of the porous and retentive soils being arranged as they are in Cachar is of considerable interest and importance in relation to some theories regarding the cause of Anthrax, therefore it deserves close attention.

13. It has often been observed in Bengal, that when Anthrax Fever breaks out among the horses of a regiment or battery, whether in stables or in camp, if they be moved to a higher ground, or to a more arable, non-alluvial soil, no fresh cases will occur after an interval of five days, the five days being the period of incubation allowed for those cases which received the infection just before the move; the inference being that the virus is located in the stable floor, or in the soil of the camp, the worst considered soil being alluvial, that the area of infection is very limited, and that it is not conveyed up hill, or on to a porous arable ground a short distance off.

14. In Cachar we find a plain of retentive soil, the worst kind of alluvium, with many steep-sided hillocks and plateaux of excellent porous arable soil rising 50 to 250 feet above the alluvium. Such contrasts exist nowhere in Bengal. The difference between arable and non-arable land there is comparatively very small—the whole of the plain of the Ganges valley is, in fact, nothing but alluvium, some parts of which are still subject to annual inundations during the rains, while others have not been so for many generations. The rising grounds at anthracoid stations in Bengal are not to be compared with the hillocks and plateaux of Cachar. From the observations made on the plain of the Ganges valley, we might think that Anthrax in Cachar would be confined to the ponies kept on the retentive alluvium of the fens and rice-fields, and that the ponies kept on the tea estates, situated upon the porous hillocks and plateaux, would be safe from the disease. But the fact is otherwise. The ponies kept by Europeans on the tops of the hillocks and plateaux have the disease nearly, but not quite in such large proportion, as the ponies of natives kept below upon the alluvium.

15. By the returns received from the tea estates of Cachar through your office, I find eighteen centres of the disease, which are very evenly distributed between the plateaux of the north and the

hillocks of the south, which is contrary to what I expected; for I thought it would be more on the south side, owing to the annual increase of alluvium in the fens surrounding the hillocks, as described above. The returns are not absolutely correct, owing to the change of managers and a want of records, but I think they approximate the truth near enough for the practical purpose required. By adding up the returns of the gardens where the disease has been, and eliminating doubtful cases, I find that 23·935 per cent. of the average number of ponies belonging to Europeans, and 26·530 per cent. of the average number of those belonging to the natives, employed on the gardens, died of Anthrax during the past five years.

16. The importance of this result at the present stage of inquiry, is in the fact that the ponies of Europeans are kept at or near the tops of the hillocks and plateaux, while the ponies of the natives are kept on the retentive alluvium of the plain below. It was impossible to get any approximate ideas of the number of ponies lost by the disease belonging to natives not employed on the plantations, but there is abundant evidence to show that their loss has been very great. These ponies are also kept on the low clay lands with few exceptions.

17. *The Virus conveyed up hill.*—If the virus is a product of the retentive alluvial soil, or of the stagnant water upon that soil, it is evident that it must be carried to the tops of the hillocks and plateaux by some means, and in many instances the air is the only conceivable way of transit. There are dense fogs rising every morning during the cold season from the fens, covering most of the low hillocks, and extending as far as the Barak, but very seldom reaching the table-lands of the north side; it seldom extends even upon the rice-fields north of the river.

18. *Conditions at Gauhati.*—Gauhati is situated on the south bank of the Brahmaputra, where the river is over a mile wide. The soil is composed of consolidated mud, the ancient deposit from the river, upon granite rock, excepting a small portion close to the river opposite the Dāk bungalow, where the granite crops above the alluvium, and is covered with a layer several feet thick of stiff red clay, such as forms the soil of the hills of the district. The land slopes down from the river side until it reaches

the stiff blue clay of the rice-fields about a mile distant, and these extend further back as a swampy plain for six miles—to the foot of the hills on the road to Shillong. In the rains these rice-fields are all under water, and the inundation extends for many miles to the right and left owing to the back water from the Brahmaputra, a branch of which, if not the main stream, came down in former days that way behind the place where Gauhati is now situated, instead of in front of it. There are low hills all about this region, formed of granite and red clay, covered by dense forest jungle. The place is so subject to malarious fever that the seat of the Assam Government was moved from there to Shillong some years ago. Very thick fogs coming from the swamps envelop the town every morning in the cold season.

19. The bungalows at Gauhati are in compounds on roads running parallel with the river. There are five compounds with stables in the front row, and in four of these the disease has not yet appeared, though it has proved fatal in every other stable in the station. This exemption I shall endeavour to explain presently, when I come to the subject of water, but now I wish to point out that the only stable where the disease appeared in the front row, on the river side, is in the compound mentioned in par. 18, situated opposite the Dāk bungalow on the granite rock and non-alluvial red clay, raised higher than any other stable in the station. The ponies of the natives are kept in the low grounds to the rear, and on both sides of the part occupied by Europeans; the disease was very fatal among them during the epizootic season of 1878-9.

20. *Conditions at Nongpoh.*—Nongpoh is the half-way station on the road between Gauhati and Shillong, situated in a small valley, about a hundred yards wide at the bottom, surrounded by low hills of granite and red clay soil covered with dense tree jungle. There is a small lake or pond, formed of the water oozing from a swampy marsh, which runs a little way up the valley, and the adjoining valleys on both sides are also swampy. Thick fogs rise every morning from the swamps. The few natives who reside there, as well as travellers who stop over-night, are extremely subject to attacks of malarious fever.

21. *Conditions at Shillong.*—(Shillong is sixty-three miles from

Gauhati.)—Anthrax Fever has been very fatal at Nongpoh, and ponies which have been detained there a few days have developed the disease at Shillong within a period of six or seven days of incubation. But the disease has not spread at Shillong, no case having occurred there which was not imported from Gauhati or Nongpoh. Shillong is situated upon sandstone rock, 4,900 feet above the sea (Nongpoh is about 1,800 feet), the country is almost entirely free from swamps, and there is no jungle. It is free from malarious fevers, and well supplied with good running water.

22. *Cause of the Disease in Bengal, according to the Principal Veterinary Surgeon's Observations.*—The Principal Veterinary Surgeon in India, judging from observations made at the chief centres of the disease in Bengal and the Punjab, is of opinion that by far the most common cause of the disease is the saturation of the alluvial soil of the stable floor or camp where horses stand, with urine, and he believes that alluvial stalls become unsafe within one month when occupied by horses doing ordinary work. Certain it is that Bacilli, to all appearance under the microscope like those of Anthrax, will readily develop in urine under favourable conditions, though they have not yet been found to cause the disease, or to multiply in the blood after inoculation. They appear to be free from virus, but it is, nevertheless, perhaps possible that they may acquire virulence under certain favourable conditions not yet discovered. A few years ago all the military stables in Bengal Presidency were floored with alluvium, and it was very common to allow the urine to soak without restraint; even vessels were placed in the ground to retain the urine as much as possible within a limited compass not far below the surface, and they were allowed to remain there many months. When they were removed for an exchange the stench was horrible. It is a native custom, and I have found it adopted in a Bengal cavalry lines so recent as two years ago. When an old Bengal battery was relieved at a station by the Royal Artillery, the vessels were left in the ground unknown to the officers trained in England, and, unsuspected, remained undisturbed for several years in many cases. They were generally found to pollute the ground on the outbreak of Anthrax Fever in the stables, when the flooring was raised for inspection, and they got the blame for the disease. It is a wonder

that Anthrax was not much more common and more fatal in those days. Since the Principal Veterinary Surgeon in India called the attention of the authorities especially to the subject, the sanitary condition of the stable floors has been greatly improved, and every care is now being taken, by the frequent renewal of the soil, and by using dry earth to soak up the urine as soon as possible after it has been passed, etc., to prevent percolation. Stations at which the disease was very fatal among cavalry and artillery horses when the stables had the common alluvial earth, flowing often saturated with urine, have been free from the disease since "pucka," almost impermeable flooring, was laid down. I therefore directed my attention particularly to know whether the theory of the Principal Veterinary Surgeon would account for the disease in Assam.

23. *Stables in Assam.*—The stables are usually made of bamboo matting, well ventilated, and the flooring on the whole in fair order, raised, well drained all round, and not impregnated with urine to any great extent. Those of Europeans on the tea gardens in Cachar are always on the sandy hillocks or plateaux, high up above the alluvial soil. But there is a practice too common both in Cachar and in the Brahmaputra Valley, of either planking the floor, or paving it with pebbles, or macadamizing it. I always found those stables smell worse than others which had an even earth flooring well rammed and frequently repaired. The planks allow the urine to pass between them and to saturate the surface soil, so that in every case when I got the planks, raised for inspection, I found the surface soil damp and stinking. The practice of flushing these floors with water makes bad worse, for it cleans only the upper surface of the planks while it hastens the rotting of the under surface. Stable floors cannot be kept too dry. The planks keep the ground damp and harbour impurities. The pebbles of the paved stalls and the broken stones of the macadamized flooring also allow the urine to percolate below them ; they lodge a great amount of decomposing organic matter, and keep the subsoil impure. It is far better not to lay stones of any kind on the floor unless they be thoroughly cemented and made impervious to water.

(*To be continued.*)

Editorial.

THE ARMY VETERINARY DEPARTMENT AND MILITARY HONOURS.

Among the numerous more or less serious causes for complaint continually urged in this Journal by officers of the Army Veterinary Department, was their rigid exclusion from those honours, privileges, and distinctions so freely bestowed on other gentlemen holding commissions in her Majesty's forces, and especially for war service. The disabilities, in one form or another, under which our army colleagues have laboured have indeed been very grievous and humiliating, and have doubtless had a tendency to produce that discouragement, that heart-sickness which cometh from hope deferred. Notwithstanding the great improvement that has been in operation for so many years in the social, intellectual, and professional position of army veterinary surgeons; and also notwithstanding the fact that for more than fifty years they have performed their duties in peace and in war with zeal and scrupulous fidelity—thus greatly contributing to economy, efficiency, and success in the administration of the army, whether in barracks or the field—all went for nothing, and they have been kept in the background, treated with absolute indifference, and their services ignored when honours and rewards were lavished on other officers, many of whom had not half the claim to them that our colleagues could have shown.

In recent times this painful and degrading position of the army veterinary officers has become all the more marked, because of the greater frequency of those little wars in which this country is obliged to engage in some part or other of the world, and the increasing liberality, or rather profusion, with which the merits of all other officers were acknowledged. Thus it has happened that in the Crimea, India, China, New Zealand, South Africa, and elsewhere—no matter how well the veterinary staff may have performed its duties, nor how strongly and emphatically generals and commanding officers may have testified to this fact—nothing was bestowed, and those who had hoped to be equally rewarded with others who had done no more, were relegated to the cold shade of neglect. The late wars in South Africa brought this injustice into greater prominence, and produced a feeling of astonishment, indeed something akin to disgust, not only in the Department, but throughout the army. So energetically was the matter at last taken up, that the authorities who have to arrange these matters appear to have been fairly shamed into making some show of recognition, and amid a shower of C.B.'s, extending, it would almost appear, to every one who had done anything in the way of duty, the officer who acted as principal veterinary surgeon in South Africa, and who held the relative rank of lieutenant-colonel, was awarded the lowest class of pension—that of a quarter-master.

The expedition to Egypt imposed a severe strain on the Department, and in spite of the previous unfair treatment to which they had been subjected, it was greatly to the credit and showed the patriotic spirit of

the veterinary officers, that they readily obeyed the call of duty, and even volunteered for what they might well know—judging from previous experience—would be a thankless task. Their duties on the voyage to Egypt, during the campaign, brief though it was, and again home, were of the most exacting and exhausting character; yet they performed them in such an efficient, successful, and praiseworthy manner as—one and all—to elicit the admiration of every officer under whom they served, or who observed their energy, skill, and self-denial. Indeed, in a campaign in which nearly every department has been accused of shortcomings, or has been found faulty in its working, the Veterinary Department alone has been proclaimed satisfactory and successful in the field, and has largely contributed to the rapidity and success with which this latest little war has been accomplished. The duties of the veterinary surgeons were varied and extremely heavy, and this, together with exposure to the climate of Egypt at a most unfavourable season of the year, in addition to semi-starvation and mal-hygiene, has had the effect of rendering nearly every one of them invalids to a greater or less extent. If ever officers deserved approbation and reward, surely they were our army colleagues! But no. In the despatch sent home by the general in command, containing the names of those he desired to bring to notice, almost every department (and among these the departments which had notoriously failed) was represented by a number of officers, while the Veterinary Department was passed over with the remark that it had been well administered by the principal veterinary surgeon in the field—Mr. Meyrick. The amount of chagrin and vexation experienced when it was found that officers who had toiled and won golden opinions remained unmentioned, can scarcely be conceived—though it was only the treatment they had been accustomed to.

On November 17th appeared the *Gazette* announcing the honours and rewards for services in Egypt, and perhaps such a list—considering the small extent and short duration of the military operations—had never before been witnessed. And here, again, it was painfully apparent that the valuable services of veterinary officers were studiously ignored. Only one name appears—that of Mr. Meyrick, who, with two or three other officers, is placed at the bottom of the list in an *extra* class of the third grade of Companionship of the Bath; while officers inferior in service and in rank are put above him in the ordinary class: just as if this comparatively small honour could not be gracefully conferred, but must carry with it the sting of humiliation. He also appears as the recipient of the third class of the Osmanieh—awarded to a large number of officers by the Khedive of Egypt. In the downpour of decorations and promotions, *only one officer of the Veterinary Department, which has excelled all others for the manner in which it has performed its onerous duties, is selected for recognition!* And it must be remembered that there were no fewer than twenty-six or twenty-seven veterinary officers in Egypt.

To show how unfairly honours have been awarded—even leaving efficiency out of consideration, and taking only numbers into reckoning—we will glance at their distribution.

Of the officers of the General Staff, about one hundred and forty in

number, *all* have received the Osmanieh or Medjidie (a Turkish order), some forty the C.B. or some other order of Knighthood, and about fifty-five have been promoted to higher rank. Of the Commissariat, fifty-five in number, three have been made C B.'s (one a K.C.B.), three have been promoted, and no fewer than thirteen received decorations from the Khedive. Of the Medical Staff, numbering one hundred and sixty, four have been made C.B.'s (one a K.C.B. *per saltum*), two C.M.G.'s, eight have been promoted, and fourteen have received the Osmanieh or Medjidie. Of the eleven officers of the Ordnance Store Department, one has been made a C.B , three have been promoted, and five have been decorated by the Khedive.

This brief summary will afford sufficient evidence that it is hopeless for veterinary officers, strive as they may, to receive fairness, or even notice ; and that if they desire honours or rewards, they are much more likely to obtain them by entering the army as private soldiers carrying a rifle and a knapsack, or by joining any other commissioned branch of the army in which scientific knowledge and expensive training is unnecessary.

If we expressed ourselves as grateful that one of our number has at last been made a C.B., we would belie our feelings in the matter, or at any rate confess ourselves as thankful for very small mercies—seeing the way in which the veterinary officers of the expedition, as a body, have been treated in this instance.

The head of the Army Veterinary Department has exerted himself in a way that might be equalled, but certainly could not be excelled to promote its efficiency, increase its utility, and thus better serve the public interests in peace and in war. For now nearly seven years—during which he has had to provide and arrange for four wars—he has laboured at his task, and so far with astonishing success. Yet while others in a similar position have received Knighthood,, or the by no means uncommon distinction of C.B., he remains as he began, perhaps consoled by the reflection (a consolation which many other members of the Department must be content with) that he has faithfully done his duty, and that those whose services have been royally recognised have done no more.

But we must not close this article without warmly acknowledging the generous and kindly feeling evinced towards the veterinary officers serving in Egypt, by many general and other officers who did all that lay in their power to obtain for them a fitting reward. Even members of Parliament and the public press have taken up the cause of the army veterinary surgeons, and probably it is from these quarters that they must look for that influence and support which will perhaps ultimately enable them to be put on an equal footing with other officers whose functions are less arduous, and certainly no more important or necessary to the success of a campaign.

But it must be remembered that the entire profession, as a body, can do much to hasten the advent of that time. The Army Medical Department not very long ago was treated very much as the Veterinary Department now is,—but the medical profession, and especially the teachers in the medical schools, soon altered the position of their military col-

leagues, and the result is witnessed not only in the *Gazette* we have been criticising, but in a score of other ways. In this, as in everything else, the profession has its welfare in its own hands.

THE EGYPTIAN CAMPAIGN.

THOUGH no definite statements have yet been made with regard to the losses among the horses during the active operations in Egypt, it will probably be found that these have been somewhat heavy, comparatively; the number actually killed in action, especially in the artillery, being considerable, and that of those dead from exhaustion through fatigue and starvation being greater. Glanders was discovered to exist in the 6th Bengal Cavalry on its arrival in Egypt—the regiment had the disease before it left India—but fortunately rigid precautions were adopted, and the malady did not spread. Rinderpest was introduced by Russian cattle from Odessa, but as the veterinary staff were on the look-out for it, it appears to have been quickly suppressed. Among the horses remaining in Egypt there has been very much sickness, those in barracks at Cairo suffering most severely—the malady being aggravated by the filthy condition of the stables and their environs. The nature of the disease has not yet been exactly determined, but it is described as a malärious fever. Lower Egypt is not a good country for horses—particularly in the Delta of the Nile, and it is certain that English troopers will not resist the climate for any length of time; so that recourse will probably be had to native Arabs, as remounts for the cavalry at least.

Of the horses which have returned, though many were in wretched condition, yet they have, as a rule, much improved, with the exception of those of Borrodaile's battery of Horse Artillery, now stationed at Coventry, and those of the 4th Dragoon Guards, quartered at Brighton and Shorncliffe. These horses had a very severe time of it in Egypt. Those of the 4th Dragoon Guards appear to have had altogether exceptional hardships. Arriving at Ismailia from England, the regiment was detained on board ship there for some days. When at last it was ordered to disembark, owing to the distance of the ship from the shore, from morning until midnight was occupied in landing the horses. This task had only been completed about an hour when the order to stand to horses was sounded, and the regiment marched at three o'clock in the morning with only corn, and that in the nose-bags. A few hours afterwards the action at Mahsameh took place, and what between exhaustion (through being out of condition, and the fatigue) and the intense heat, the horses kept falling about, and fourteen died from these causes, while fourteen were killed. No forage was obtained until the following day, and while the horses were suffering much from hunger and prostration, their riders were little better off. With the exception of outpost and reconnoitring duties, a rest was allowed here, until the affair of Kassassin, on which occasion the regiment was away from camp for twenty-four hours. Until Tel-el-Kebir the duties were heavy and irregular, and forage scarce. Parading early and marching with the other troops, during that action the regiment galloped for three miles, and then started for Cairo; pushing on all day, halting for only two or three hours during the night, and off again at day-dawn, it arrived at that city towards evening—having traversed between seventy-three and seventy-eight miles in the two days, and with only a little forage. The horses were never unsaddled from the day of Kassassin until arrival at Cairo, and they carried men nearly as large and heavy as the Life Guards. Only this regiment and the 13th Bengal Lancers arrived first at Cairo, the next arrival being Borrodaile's battery, which had endeavoured to

accompany these regiments, at the expense of terrible distress to the horses in dragging the guns through deep sand for such a long distance. At Cairo the only forage for some time was a little indigestible barley and straw.

Before anything at all like recovery from these hardships had taken place, these artillery and cavalry horses were sent home, and soon after reaching barracks, the weather set in cold, wet, and windy. The great debility from which they were suffering predisposed them to inflammatory attacks, due to the change of temperature, and these were manifested in the form of acute rheumatism, particularly of the limbs and muscles of the loins, and Pneumonia. These diseases did not offer any special features.

It is probable that very many of the horses are completely broken down in health, and will not be fit for further service as troopers. The anæmia or bloodlessness from which they suffer is well marked in the paleness—almost whiteness—of the mucous membrane of the nostrils and eyelids.

THE ROT IN SHEEP, OR THE LIFE-HISTORY OF THE LIVER-FLUKE.

BY PROFESSOR A. P. THOMAS, OXFORD UNIVERSITY.

(From *Nature.*)

THE winter of 1879-80 was marked by a widely-spread outbreak of the liver-rot amongst our sheep. The losses during that winter were estimated at three million sheep, or about one-tenth of the total number in the United Kingdom, and during the following winter the losses were equally severe. It had long been known that the disease was due to the presence in large numbers of a parasite called the liver-fluke (*Fasciola hepatica*) in the liver of the affected animals, and that the parasite invaded sheep or sometimes other animals allowed to feed on wet pastures, and especially on flooded ground. But notwithstanding that the question had been repeatedly investigated by numerous zoologists, including Prof. Leuckart, so well known for his researches on parasites, the manner in which the disease was incurred remained a complete mystery. It was known indeed that the animals most nearly allied to the liver-fluke, the digenetic Trematodes, presented an alternation of generations, and that they possessed larval forms infesting various species of molluscs. These nurse-forms, as they are called, produce internally larvæ, usually tailed, known as cercariæ, which leave the nurse and encyst themselves in some other mollusc or in aquatic insect larvæ, etc., and remain there quiescent, only reaching maturity if swallowed together with the animal harbouring them by some suitable vertebrate host. Such is a typical instance of the development of a trematode with alternation of generations, but there is a great deal of variety in the life-histories of the different species. It was supposed that the liver-fluke had a somewhat similar life-history, but all attempts to discover what mollusc served as intermediate host had been fruitless.

The Royal Agricultural Society of England was induced by the heavy losses of sheep in 1879-80, to offer a grant for the investigation of the natural history of this most destructive parasite. I undertook the research, and the results of my work during the summer and autumn of 1880 were published in the Journal of the Society for April, 1881. Certain slugs had been suggested as probable bearers of the larval form of the liver-fluke, and I was able to show that these conjectures had little evidence to support them, and suggested that *Limnæus truncatulus* was really the intermediate host, or at least one of the intermediate hosts of the liver-fluke. For on the Earl of Abingdon's estate at Wytham, I examined thoroughly a clearly circumscribed

area of infection situated on the side of a hill far above the reach of floods, and found that almost the only species of water-snail occurring on the ground was *Limnæus truncatulus*, found in a boggy spot. This contained an interesting form of cercaria, produced in a cylindrical redia, or nurse-form provided with digestive tract.

The free cercaria had a body of oval form, about 0·3 mm. ($\frac{1}{80}$ in.) in length, but was of very changeable shape. The two suckers characteristic of the adult forms of the family of the *Distomidæ* were of nearly equal size, the oral sucker about terminal, and the ventral sucker near the middle of the ventral surface. The anterior part of the body was covered, at least in the most mature examples, with exceedingly minute spines. But the most striking character of the cercaria was due to lobed lateral masses extending the whole length of the body on each side of the middle line. These lobed masses were an opaque white from the multitude of granules composing them. The cercaria had a tail, which, when fully extended, was more than twice the length of the body. It was exceedingly active, but soon came to rest, showing a strong tendency to encyst itself on surrounding objects. It contracted so as to assume a rounded form, and exuded a mucous substance, containing numerous opaque granules derived from the lateral masses described, which were thus shown to be a special larval organ, producing the substance of which the cyst was composed. The tail continued to wag violently, and was at length pinched off as it were by the hardening wall of the cyst. The cysts were snowy white by reflected light, but on rupturing them the included larvæ was found to be quite transparent. I had a few months previously seen a sheep which I had the best possible reason for knowing to be infected with flukes, wandering over the boggy spot from which the snail containing the cercaria came, and the presence of so highly developed an organ for the production of the substance of the cyst in a cercaria which encysted on any plants at hand, seemed to indicate that here was the cercaria of the liver-fluke, and it has since been proved that such was the case. Moreover, I had collected evidence from independent sources, which rendered it probable that the parasite was taken up by the sheep while grazing from the damp roots of grass, most likely in the encysted condition.

Of this cercaria I wrote at the time as follows :—"The structure and habits of this cercaria render it possible that it may prove to be the larva of *Fasciola hepatica*, but want of material has prevented my testing the question by giving the cyst to rabbits. I intend, however, to pursue this case further."

Accordingly, during the summer of 1881, I endeavoured to procure *L. truncatulus* in order to put my strong suspicion to the test of experiment. But I was unfortunately unable to find any, even in the localities where I had found it during the previous year. In my search I had on many occasions the skilled assistance of my friend and colleague Mr. W. Hatchett Jackson, but we never found any other trace of this species than the empty shells. The localities for the snail mentioned by Whiteave in his paper on the mollusca inhabiting the neighbourhood of Oxford, were searched, but without success. My friends at a distance were appealed to, but were unable to assist me. There can be little doubt that the freedom of sheep near Oxford from the liver-rot during last winter was directly connected with the real scarcity of this snail. This year, however, there were floods on the Isis in July, and *L. truncatulus* was brought down by the water in vast quantities, probably from marshy ground far up the river. So numerous were they that I repeatedly obtained as many as 500 specimens at a single sweep of a small hand-net. The low-lying meadows near the river were covered with the flood waters, and when these subsided the snails were left scattered broadcast over the fields. The snail is almost the smallest species of Limnæus ; the variety which I found so abundantly was only a quarter of an inch long when fully grown. Although

it is a water-snail it lives much out of water. My observations have convinced me that the individuals left by floods on the fields continue to live out of water so long as the ground is moist. Their numbers are recruited by others which crawl out of neighbouring ditches or streams. If a drought occurs they become dormant, but unless too long continued they revive with the first shower of rain.

On discovering these snails I immediately started infection experiments with them, and was at once successful. The adult fluke in the liver of the sheep or other mammalian host produces vast quantities of eggs. So prolific is it that I have estimated the number produced by each fluke to be at least several hundred thousand. The eggs pass with the bile into the intestines and are distributed over the fields with the manure. If the eggs fall on to wet ground, or are washed into a ditch, development continues, and after a time, the length of which depends upon the temperature, embryos are hatched out of the eggs. For the purpose of my infection experiments I obtained eggs from the livers of affected sheep, and kept them in water until the embryos were hatched, and then transferred them to vessels containing the snails to be experimented upon.

The embryo of the liver-fluke has the shape of an elongated cone with rounded apex ; its average length is ·125 mm., or about 1/200 of an inch ; its breadth at the anterior end about one-fifth of this. The broader end or base of the cone is always directed forwards, and in the centre of this a short retractile head-papilla. The whole of the surface, with the exception of the head-papilla, is covered with very long cilia, by means of which it swims, with head-papilla drawn in, swiftly and restlessly through the water. It is exceedingly active ; sometimes it goes rapidly forwards, and then rotates on its longitudinal axis, just turning a little from side to side as if searching for something. At other times, by curving its body, it sweeps round in circles, or, curving itself still more strongly, spins round and round without moving from the spot. The cilia are carried by an outer layer of flattened ectoderm cells arranged in five or six transverse rings around the body, and are of the same length over the whole of the surface. The first ring is composed of four cells arranged around the papilla, and these are thicker than the other outer cells, often forming projections at the side of the embryo and resembling epaulets. Beneath these ciliated cells is the body-wall proper, and within this are a number of delicate vesicular cells—the germinal cells. Behind the head-papilla is a rudimentary digestive tract. The body-wall contains, near the anterior end, a double eye-spot, composed of crescentic masses of dark pigment, placed with their convex sides turned towards each other.

When the embryo, in moving through the water, comes in contact with any object, it pauses for a moment, and feels about as if trying to discover its nature, and if not satisfied darts off hastily again. But if the object be a *Limnæus truncatulus* it at once begins to bore. Under ordinary conditions the head-papilla of the embryo is short and blunt, but as soon as the animal begins to bore it becomes longer, conical, and pointed. The embryo spins round on its axis, the cilia working vigorously and pressing the embryo against the surface of the snail. This pressure is increased by the body of the embryo being alternately drawn up and then suddenly extended. As the papilla sinks further into the tissues of the snail it becomes longer and longer until it reaches five times its original length, and the tissues of the snail are forced apart as if by a wedge, leaving a gap through which the embryo squeezes its way into the snail.

The embryo will not bore into all snails alike ; the only other species which I have found it bore into from without is *Limnæus pereger*, and even here the specimens have always been such as were still very small. I have found embryos enter certain other snails, such as *Planorbis*, but only from

eggs which had been swallowed by the snail and had been hatched in the digestive tract. This difference seems to be due to an instinctive choice on the part of the embryo, rather than to a greater softness of the tissues in *Limnæus truncatulus*. The tissues of *Physa fontinalis*, for instance, appear to be equally soft, but I have found that if these two species are placed in a small bulk of water with a very large number of embryos, the *Limnæi* will be found on dissection to contain fifty or more embryos, whilst the *Physæ* will be entirely free from them.

But although the instinct of the embryo seemingly prompts it to enter the right snail, it does not teach it to discriminate between the different parts of the snail's body, for I have found as many as a dozen embryos within the substance of the foot of a single *Limnæus truncatulus*. Such a position of course is not favourable to further development of the embryos, which, thus gone astray, soon perish.

The natural place for the further development of the embryo appears to be the pulmonary chamber, but they may also be found in the body cavity. Once safely lodged in the suitable locality, the embryo undergoes a metamorphosis. It loses the external layer of ciliated cells and changes from the conical to an elliptical shape. The eye-spots usually become detached, but they, as well as the head-papilla persist, showing the identity of the young sporocyst—for so it must now be called—with the embryo of the liver-fluke. The active embryo has degenerated into a mere brood-sac, in which the next generation is produced. The sporocyst increases rapidly in size, the round, clear cells contained within it increase in number, partly perhaps owing to the division of the germinal cells of the embryo, but also owing to a multiplication and subsequent detachment of the cells lining the inside of the body-wall. As growth proceeds the contents of the sporocyst arrange themselves into round balls of cells, the germs of the second generation. These germs increase in size and assume first an oval and then an oblong shape, whilst a delicate cuticle is formed upon the surface. At one end a number of cells are arranged to form a spherical pharynx, which leads into a blind digestive sac. A little behind the pharynx the surface of the body is raised into a ridge, forming a ring surrounding the anterior end, whilst near the opposite end two short processes grow out. The germ has now become a redia, as the brood-sac or nurse-form provided with pharynx and intestine is called. The adult sporocyst is sac-shaped, and reaches the length of ·6 mm. : it usually contains one or two rediæ nearly ready to leave, together with two or three larger and several smaller germs. There is another method of increase during the sporocyst stage, namely, by the division of a sporocyst into two others by a constriction separating the original one into two smaller ones. This method of multiplication, however, does not appear to be frequent in this species.

When the redia is ready to come forth, it breaks through the wall of the sporocyst, and the wound caused by its forcible exit immediately closes up, and the remaining germs continue to develop. The injury done by the parasites to the snails causes a serious mortality amongst them, especially at the time the rediæ begin to leave the sporocysts, for the former are much more active than the almost inert sporocysts, and migrate from the pulmonary chamber into the other organs of the snail, and particularly into the liver, upon which they feed. The rediæ can be observed with the microscope, through the transparent shell, moving in the snail's liver. So great is the injury done, that in the laboratory, at any rate, very few snails survive three weeks from infection.

The redia increases in size, and may ultimately reach the length of 1·3 mm. or about one-twentieth of an inch. It resembles in every respect the rediæ I formerly described as found in the same snail at Wytham. Its contents of

spherical cells arranged themselves into round germs as in the sporocyst, though I was able in this case to observe the formation of a gastrula. The germs at first were spherical, they then become oval, and afterwards they elongate still more, whilst one end becomes narrower than the other. The narrower end is partially constricted from the remainder, and becoming long and slender, forms the tail of the cercaria, whilst the rest of the germ becomes the body. A sucker appears at the anterior end, and another of nearly equal size at the middle of the ventral surface of the flattened body, whilst within a digestive tract appears. This digestive tract is simply forked, and presents no trace of the lateral branches so characteristic of the adult.

The adult redia contains about a score of germs, but these are in very different stages of development. There are generally two or three nearly mature, the others in various stages down to small spheres of cells. Close to the raised ring surrounding the body of the cercaria there is a small opening as in all redix, by means of which the cercariæ are destined to be liberated one by one as they come to maturity.

But not all the rediæ produce cercariæ, for they sometimes produce other rediæ, and these daughter-rediæ then give rise to cercariæ. These latter, therefore, sometimes only appear as the fourth generation in the snail, and in one set of experiments I had reason to believe that no cercariæ appeared earlier. It will thus be seen that a single embryo may give rise to more than a thousand cercariæ.

In April of the present year Leuckart published a paper in the "Archiv für Naturgeschichte,"* where he described certain experiments on the development of the liver-fluke. He believed that *Limnæus pereger* was the intermediate host, and had suceeeded in infecting this species, though he had failed to rear the redia beyond the stage in which the contents were forming into spores. He had, however, obtained a number of *L. truncatulus* from a friend, and had found in them three different sorts of rediæ. One of these contained tailless distome larvæ, and notwithstanding that the characters of the redia were very different from those reared from the embryo of the liver-fluke, he believed the conjecture that this was really the larva of the liver-fluke to be entirely justified until further results were obtained. The second form he considered might possibly be related to the liver-fluke, but the probability was far less than in the case of the tailless form. In his description of the third form I at once recognised the cercaria I had already found and suggested as the larva of the liver-fluke. Leuckart, however, did not consider that there could be any connection, because he failed to detect any spines on the surface of the body such as we should expect, and on account of the lobed lateral organs, which he thought might be the vitellaria of the adult.

I wrote a report of my own results as described above, giving them, however, in greater detail, for the October number of the Journal of the Royal Agricultural Society. This report was sent to the printer on the 1st of September, and a fortnight later received a revision which was merely verbal.

On October 9th a paper by Leuckart appeared in the *Zoologischer Anzeiger*, a periodical which gives rapid publication to important papers. In this Leuckart extends his former results, and states that he too has reared the cercaria of the liver-fluke in *L. truncatulus*, and finds that it is the form with the lobed lateral organs which he had already seen, and supposed to have no connection with the liver-fluke. It will be seen, therefore, that the cercaria of the liver-fluke is really the form found by me in *Limnæus truncatulus* at Wytham, and described in the Royal Agricultural Society's Journal for 1881. It is interesting to see this result confirmed, not only by my own experiments, but also by Leuckart's independent investigations.

*Leuckart's paper is translated in the VETERINARY JOURNAL for last month.

Leuckart has not been able to find any trace in the cercaria of the spines which cover the surface of the adult fluke. He has, however, found in the cells of the cercaria small rod shaped bodies closely resembling bacteria in shape and size, and thinks they may eventually be arranged in bundles, and form the spines of the adult. But I have already stated that the anterior part of the body of the cercaria is covered with exceedingly fine spines, which can, however, only be seen in the most mature examples. The reason why Prof. Leuckart could not observe these spines was possibly because his examples were scarcely so mature. The rod-like bodies he mentions have certainly no connection with the spines of the adult. He states that they have never yet been found in other cercariæ. I may perhaps be allowed to say that they have been described by three different observers, first by Wagener, then by Filippi in the cercaria of *Amphistoma subclavatum*, and by myself in the cercaria of the liver-fluke (described in April, 1881).

For further details of the structure and natural history of the liver-fluke, as well as the discussion of preventive measures, I may refer to my reports in the Journal of the Royal Agricultural Society.

NATIONAL VETERINARY ASSOCIATION.

AT the British National Veterinary Congress of 1881, it was proposed, seconded, and carried unanimously that a Committee should be appointed to investigate and inquire into the advisability of establishing an Association for the purpose of holding future meetings—similar to the Congress—and otherwise promoting the advancement of veterinary science.

In accordance with this resolution a "Committee" was formed by each of the existing Veterinary Medical Societies, appointing two of its members to represent them, two representatives from the Army Veterinary Department, one from each of the teaching schools, and the President of the Royal College of Veterinary Surgeons.

A meeting of this Committee was held at 10, Red Lion Square, on Friday, October 27th, at two p.m., G. Fleming, Esq, in the chair.

Resolutions were carried to the effect that—

1. An Association should be formed under the name of the "National Veterinary Association."

2. The objects of the Association should be to promote and advance veterinary science, and maintain the honour and interests of the veterinary profession.

This, at present, to be limited to providing means for holding general meetings of the members of the Association in various parts of the country for discussing professional topics.

3. Its members should consist of holders of the diploma of the Royal College of Veterinary Surgeons, or the veterinary certificate of the Highland and Agricultural Society of Scotland, who conform to the rules of the Association, and pay their annual subscription.

4. The subscription was fixed at 10s. 6d.

5. The Association should be ruled and governed by a President, President-elect, Vice-Presidents, Treasurer, Council, and Secretary, together with a local "Provisional Committee."

6. The first General Meeting should be held in London, the day after the next Annual Meeting of the Royal College of Veterinary Surgeons in May next.

7. Subsequent meetings be held in different parts of the kingdom, from time to time, as the Council shall appoint, under the management of a local "Provisional Committee."

8. The "Provisional Committee" be formed from the members of the Association living in the neighbourhood of the place appointed for the next General Meeting.

9. That, in accordance with resolution 8, the "Provisional Committee," to provide means and regulate the business of the sittings for the First General Meeting in May next, be elected from members of the Central and Southern Counties Veterinary Societies, and others living in or near London.

The "Provisional Committee" entrusted with the arrangement of the General Meeting next May has been formed, and will shortly issue a circular announcing the formation of the Association, etc., etc.

We confidently believe it is the wish of the profession at large that such an Association should be established; and that they are quite cognisant of the scientific, social, and other advantages to be derived from it. However, to ensure success in such an undertaking in the veterinary profession it is essential that all its members should assist. Therefore the co-operation of all is earnestly requested.

By the Committee of Enquiry appointed by the British National Veterinary Congress,

Signed { G. A. Banham, / J. H. Steel, } *Hon. Secs. B.N.V.C.*

Reviews.

The Principles and Practice of Bovine Medicine and Surgery. By J. Woodroffe Hill, F.R.C.V.S. (London: Baillière, Tindall, and Cox. 1882.)

A hearty welcome must be accorded Mr. Hill's book on Bovine Medicine and Surgery, not only on account of its utility, but on the excellent manner in which it is brought out. In itself the work is greatly in advance of anything that has yet appeared in this particular section of veterinary medicine and surgery, and so far as Mr. Hill's individual experience and that of other writers are concerned, it adequately represents the present position of the subject as a whole. The plates are good—many of them very good—and the woodcuts sufficiently illustrative to convey what words might do insufficiently. The arrangement of the matter will commend itself to busy practitioners, to whom it furnishes valuable information in a ready and convenient form. There are few active members of the profession who will not appreciate the author's desire to assist them in their daily avocation, by bringing together into one volume materials collected from many different sources, and so sparing their time and patience; while his own contribution to the stock of knowledge will be gratefully accepted, and, we feel sure, highly valued. No expense or pains appear to have been spared in the attempt to make the book a success, and more than credit is due to Mr. Hill for its production, in the midst of the turmoil and cares which attend the every-day routine of a veterinary surgeon's career.

AN ESSAY ON THE BREEDING AND MANAGEMENT OF CART HORSES. SECOND EDITION. By R. S. Reynolds, M.R.C.V.S. (London: Baillière, Tindall, and Cox. 1882.)

Little more than a year ago we noticed this booklet, and now we are gratified to find that the demand for it has necessitated a second edition. The subject is interesting and important, and there can be no doubt that the able manner in which it has been treated by Mr. Reynolds will obtain for it all that consideration which it so fully demands.

We note that Mr. Reynolds is in favour of the use of the bearing-rein for draught horses, and he gives his reasons. Those who oppose this rein would probably dispute these reasons with more or less success; but while unwilling to be a partisan of either side, we certainly cannot agree with the statement that "by disuse of the bearing-rein, cart-horses contract a tendency to become careless and slovenly in their gait, and to carry their heads to the near side from absence of equal bearing on both sides the mouth; and, in my opinion, it is as reasonable to expect a hackney to carry his rider safely and well, as for a cart-horse, unassisted by a bearing-rein, to be clever, active, and safe at his work." So far as our own experience is concerned, it is only in countries, as England, where bearing-reins are worn that we see horses careless and slovenly in their gait; while in those in which it is not in use—as in Scotland—horses are clever, active, and safe at their work. The bearing-rein would spoil the quick, easy-stepping, and powerful Clydesdale horse, as we see him in such cities as Glasgow; and the Scottish carter, not without justification, looks upon it as not only useless, but an instrument of torture, and a source of loss of power. The comparison between a hackney and a cart-horse is scarcely appropriate in this discussion, inasmuch as the former has to carry the rider's weight on its back, or rather forehand, while the latter has the weight supported on wheels. But the employment of the bearing-rein has never been discussed in relation to animal mechanics, and until this is done it is probable that it will have its advocates.

THE SIMPLE AILMENTS OF HORSES: THEIR NATURE AND TREATMENT. By W. F. (London: Cassell, Petter, Galpin and Co. 1882.)

THE HORSE-OWNERS' SAFEGUARD. By G. S. Heatley, Veterinary Surgeon. (Edinburgh and London: W. Blackwood and Sons. 1882.)

It is scarcely within the province of a professsional journal to make comments on books which are obviously not written for professional men, and are, therefore, of no possible interest to them. The above two works are published for the information of amateurs, and so far they may answer their purpose, though we have already freely expressed our opinion with regard to the risks and futility of amateur animal doctoring. There is much in both books which few amateurs

will understand, a good deal of advice given which they had better not act upon, hints which are more likely to mislead than to lead, and omissions which are serious if the treatises are to be of any use. For instance, in the first work Glanders and Farcy are not mentioned, and surely the amateur, if he is to know anything at all of horse maladies, should have an inkling of these two forms of one very formidable disease.

In the second work, Mr. Heatley (whose name does not appear in the Register of Veterinary Surgeons) states in reference to this malady: "We may take matter from a glandered horse, and give it in a ball to a healthy one, without producing the disease—the digestive organs seem not to accept it." Mr. Heatley possibly does not know that it has been experimentally demonstrated, over and over again, that the digestive organs will "accept it," and that in all probability this acceptance is a very frequent cause of infection. If the horse-amateur world must have guide-books to aid and instruct them in diagnosing and treating diseases, as well as in performing operations which require much anatomical knowledge and surgical skill, then these works should certainly be supervised by some one who is in a position to prevent the dissemination of error, pass what is useful, and refuse what is worse than useless.

STABLE MANAGEMENT AND THE PREVENTION OF DISEASE AMONG HORSES IN INDIA. By J. J. Meyrick, F.R.C.V.S., Army Veterinary Inspector. (London: Baillière, Tindall, and Cox. 1882.)

This little book is the substance of some lectures delivered recently at the Army Veterinary School at Aldershot, to veterinary surgeons and officers of mounted corps stationed there. Mr. Meyrick had every right, from long experience and close, enlightened observation, to speak with authority on the stable management and diseases of horses in India, and his lectures are consequently full of sound and valuable information, which will be most welcome not only to veterinary surgeons and cavalry and artillery officers about to proceed there for the first time, but also to those who may have spent years in the country. The lectures are sure to be largely read, and especially as they are well printed in a handy and cheap form.

Army Veterinary Department.

THE *Gazette* of November 17th publishes the names of a crowd of officers who are decorated and promoted for service during the late campaign in Egypt, and among them appears the name, for the first time, of an officer of the Veterinary Department—J. J. Meyrick, Inspecting Veterinary Surgeon, who held the local rank of Principal Veterinary Surgeon. He received the Companionship of the Bath (C.B.), and the third Class of the Osmanieh—an Egyptian or Turkish distinction.

Veterinary Surgeon F. F. Walker, First Life Guards, with other selected officers and men, attended at Windsor Castle, to receive the Egyptian War Medal from the Queen in person.

The *Standard* has the following :—" So perfect have been all the arrangements of the Veterinary Staff in Egypt, that the Secretary of State for War, we understand, is to be recommended to confer some special mark of recognition on the officers of the Army Veterinary Department, who have hitherto passed unnoticed at the close of a campaign. The veterinary surgeons attached to the expedition are said to have been unremitting in their exertions, and have saved the country vast sums of money.

On the recommendation of the Director-General of Military Education, a new appointment—that of Veterinary Lecturer—has been added to the staff of the Department of Artillery Studies at Woolwich. First-Class Veterinary Surgeon J. C. Dwyer has been selected for the post, the creation of which has been long thought desirable.

Parliamentary Intelligence.

House of Commons, November 16th.

THE ARMY VETERINARY DEPARTMENT.

COL. O'BEIRNE asked the Secretary of State for War whether he could now state, in conformity with a promise made on the 17th of March last, what decision had been arrived at with regard to the readjustment of relative rank and retiring pay of the officers of the Army Veterinary Department.

Mr. CHILDERS replied that the question of the readjustment of the relative rank and retiring pay of officers of the Army Veterinary Department had been before him, as well as other questions affecting the estimates of the year, but he did not think it prudent to anticipate what would be shown in the estimates on the subject.

Mr. CALLAN asked if there was any reason for excluding officers of the Veterinary Department from receiving the decorations to be given at the Royal review to every other branch of the service serving in the late Egyptian campaign.

Mr. CHILDERS.—In reply to the hon. member, I have to say that I entirely fail to understand his question. I am not aware that Her Majesty contemplates giving any decoration at the approaching review, nor am I aware of any intention to exclude the Veterinary Department from any distinctions of medals or decorations which Her Majesty may be pleased to make.

Obituary.

THE profession has sustained a heavy loss in the death of Mr. W. A. CARTWRIGHT, of Whitchurch, Salop, a most zealous and intelligent practitioner, who, having graduated in 1840, commenced a busy and laborious career as a country veterinary surgeon. Taking the greatest interest in everything connected with his calling, Mr. Cartwright more especially turned his attention to that greatly neglected branch of veterinary surgery—obstetrics—and for a number of years his contributions to the literature of the subject were numerous and valuable, bearing, as they did, the impress of a skilful and observant practitioner. It was greatly due to his solicitation that we commenced our work on " Veterinary Obstetrics," in the progress of which he took a deep interest, and for the more practical section of which

he generously volunteered to lend his manuscript notes of cases and references. In everything pertaining to professional progress he was in advance, and he was one of the foundation Fellows of the Royal College of Veterinary Surgeons. In every sense of the word he was a worthy man.

J. B. GREGORY, M.R.C.V.S., and Inspector for the Privy Council at Portsmouth, suddenly expired on October 14th, aged sixty-eight years. He graduated in 1835, and carried on an extensive practice in Southsea and Portsmouth, where he was justly esteemed.

The death is announced of W. F. COOPER, M.R.C.V.S., of Great Berkhampstead, Herts, who graduated in 1865.

JOHN GILLIGAN, M.R.C.V.S., died at Glasgow, on October 15th. He became a member of the Royal College in 1873.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD OCTOBER 26TH, 1882.

GEORGE FLEMING, ESQ., President, in the Chair.

Members present.—Messrs. J. W. Axe, H. T. Batt, F. Blakeway, G. T. Brown, William Broughton, B. Cartledge, H. J. Cartwright, T. R. Cox, E. C. Dray, Sir F. Fitzwygram, Messrs. T. Greaves, M. J. Harpley, H. R. Perrins, W. Pritchard, R. Reynolds, W. Robertson, J. B. Simonds, H. L. Simpson, A. H. Santy, T. H. Simcocks, P. Taylor, T. Walley, W. Williams, W. Whittle, W. Woods, T. W. Wragg, and the Secretary.

The SECRETARY read the notice convening the meeting.

On the motion of Mr. DRAY, seconded by Mr. TAYLOR, the minutes of the last meeting were taken as read.

The SECRETARY read a telegram from Mr. Anderton, regretting his inability to attend the meeting.

The SECRETARY then stated that presentations to the library had been made by George Fleming, Esq., President, and Professor Williams; also pamphlets by Professors Thiernesse, Dégive, Semmer, Pütz, and Ercolani.

Mr. DRAY moved, and Mr. BLAKEWAY seconded, a vote of thanks to those gentlemen for their contributions, which was carried unanimously.

The SECRETARY said he had received letters from the Scottish Metropolitan Veterinary Society, memorialising the President and the Council, to the effect that a member of the veterinary profession should be appointed at the Materia Medica Table in lieu of the Medical Examiner. Also a letter from the Midland Counties Veterinary Association, praying that veterinary surgeons only be appointed as Examiners for the Diploma. Also from the Irish Central Medical Society, asking that only members of the veterinary profession be appointed Examiners.

The SECRETARY read a letter from Mr. T. D. Hulme, stating that he had lost his diploma. The usual certificate was ordered to be sent.

The SECRETARY then read a letter from the Irish Central Veterinary Medical Society, stating that a member of the profession had been using a title to which he had no right.

After a short discussion it was agreed that a copy of a letter received from the Secretary of State be sent to such member.

July Examinations.

The Report from the Court of Examiners was taken as read.

Registration Committee.

The SECRETARY read the Report of the meeting of the Registration Committee held on the 12th October.

The CHAIRMAN said at the first meeting of the Committee it was decided that every member of the profession should have a list of the names proposed for registration sent by post, in order that the members might judge as to the fitness of the men. At the last meeting the question was discussed, and some members were of opinion that the sending out of such a list entails great expense, and it was suggested that advertising in the professional journals would be sufficient. It was for the Council to decide which of the two courses was to be adopted.

Mr. SIMPSON said at the last meeting of the Registration Committee he had proposed that lists should be sent to every member. Since then he had seen many members of the profession, and most of them were in the dark as to the working of the Act, and thought it a most desirable thing to do. He begged to move that circulars be sent as originally proposed by the Committee.

Mr. SANTY seconded the motion.

The CHAIRMAN thought that whatever information they wished to give to the members of the profession should be entirely of a private nature.

Professor BROWN said it was a question for the Council to consider whether it was worth while running the chance of litigation. A Mr. Goodman had written a letter to the Privy Council, saying it was contemplated to publish the names of intended applicants, and that they were of opinion that such publication would be injurious to their interests ; and therefore called upon the Privy Council to interfere. There was nothing in the Act giving the Privy Council any right to protest against any act of the Council in that direction : it was simply a matter for the Council to decide.

Mr. GREAVES thought it was part and parcel of their duty to consider whether the applicants were men of sufficiently good character to belong to the profession.

Mr. TAYLOR said that they had no right to publish the names *pro bono publico.*

Professor WALLEY said that the circulars could be marked "private" if necessary.

Professor BROWN then referred to a clause in the Act.

Mr. TAYLOR said that if the Council damaged the character of applicants, they could bring an action against it. The applicants had to a certain extent given proof of their respectability by making declarations before magistrates.

The CHAIRMAN said there was power to require from those who sought registration some evidence as to their respectability. At their Annual Dinner, Mr. Mundella, M.P., had spoken about the desirability of keeping out men of bad character, and the Council had that feeling also. He thought that the Royal College before it registered any one, should protect itself from admitting on its Register any men who were utterly unfit. He thought that simply a certificate of respectability was not sufficient to protect the public. If a man registered himself falsely he could, under the Act, be severely punished ; he was liable to a period of imprisonment for twelve months, and anybody who assisted him was liable to the same punishment. He did not see any harm in issuing a circular containing the names of applicants, which was entirely a private matter for the profession.

Mr. SIMPSON said he would withdraw his proposition with regard to the insertion in the journals, and would simply propose that a circular marked "private" be sent to members of the profession, and those protesting must send in reason of protest within one month of the issue of such circular.

The motion as amended was put and carried.

The Matriculation Scheme.

The SECRETARY read the Report of the Examination Committee, held on the 12th October.

Professor SIMONDS said it was upon his motion at the last meeting of the Council that the Report of the Matriculation Committee was handed back for reconsideration. He was inclined to think that the course adopted with regard to the circular was altogether a mistake. He held that the Council had really no right to interfere with the education of the students prior to their entering the colleges. They were, strictly speaking, an examining body, and not an educational body. He believed if they usurped the power which was now possessed by the schools they would find themselves in a critical position. If the Matriculation Report were adopted, if a young man presented himself for examination and he was rejected, he being about to enter one of the schools, that school, for the time being, at any rate, would be deprived of a student. If they looked to the schools, they would find that one of them, at any rate, had a charter of incorporation, and in that charter there was given power to sue the sued ; so that there was no question as to their right to call upon the Council to state why it interfered with the entrance of students. The Council was looking forward to obtaining another Charter which would give them power to institute Matriculation or Educational Examinations ; and that being so, it would be decidedly the safest plan for them not to adopt the Report of the Matriculation Committee. He begged to move that the Report be on the table till the Council was in a position legally to institute Matriculation Examinations, prior to students entering upon their studies at the several schools.

The CHAIRMAN thought Professor Simonds had rather mistaken the view of the Council with regard to the examinations. The Council did not attempt to prevent students from entering the schools. It simply asked for evidence that the students who came up for their first examination had received a certain amount and kind of education. The new scheme would not prevent students entering schools. With regard to the legality of the action, that had been decided, inasmuch as the question had been submitted to the Attorney-General, and he had stated that the Royal College of Veterinary Surgeons had power to exact that information from the students.

Professor SIMONDS said that whatever legal opinion might be expressed, the safest course was to adopt the common-sense view of the matter, which was that the Council was simply an examining body. It was quite true that the student could be called upon to produce a certain certificate setting forth that he had passed a particular matriculation examination ; but supposing they found that a student had not passed that examination according to their scheme, they would then refuse to give him an examination, but directly they refused the student could commence an action against them.

Professor WALLEY said if they were in an illegal position, let them by all means put themselves right. He was quite sure that all the members of the Council were anxious that the students should be properly educated before they went into the colleges. The question was, Should the Council take the matter up, or ought the colleges to do so ? He did not see that there should be any difficulty in the colleges agreeing to some such scheme, and if there was any question of legality about it, it would be better to adopt that course than run any risk.

Mr. ROBERTSON said he certainly opposed every scheme which did not put into the hands of the Council the whole management of the Matriculation Examination.

The CHAIRMAN thought that the Council had better adhere to the opinion of the Attorney-General. He believed that the College had power to ascertain

whether a student had been properly educated. If the Council had no such power, it might as well not examine at all. He thought it would not do to leave the power in the hands of the schools. A student who had been rejected at one school could go to another of a lower standard, and that he considered unfair. If the Royal College ascertained that the candidate was sufficiently educated for his first examination, it would be a great responsibility taken off the schools, and would do great public service.

Professor WILLIAMS said he supported what was recommended by the Committee. He saw no provision for the examination in Scotland, and if the Committee could provide an examination for Scotland he should certainly recommend that the proposals of the Committee be adopted. In Scotland the College of Preceptors was totally unknown. At the present time, he thought, more liberal provision must be made for examination.

Professor WALLEY said it was useless to discuss the matter until they knew whether they were acting legally. He begged to propose, "That legal opinion be obtained on the matter."

The SECRETARY then read one of the opinions obtained, namely, that of the Attorney-General.

The CHAIRMAN said he had ascertained that the College of Preceptors had examiners in Scotland, and could institute a Board at any time.

Professor SIMONDS said it was desirous that all students should be examined by the same body, whether they entered the College at London, Edinburgh, or Glasgow. He therefore asked that the matter might be in abeyance.

Professor WALLEY said that there was one man at least who would not agree to the question being carried, and that was Professor McCall.

The CHAIRMAN said it was for the Council to decide whether the education examination scheme should be enforced or not.

Professor SIMONDS proposed, and Professor WILLIAMS seconded, "That the Report of the Matriculation Examination lie on the table."

The motion was carried.

Finance Committee.

The SECRETARY read the report of the last meeting.

Mr. DRAY called attention to the applications which had been received, accompanied by the requisite fees.

Mr. SIMPSON asked if the amount collected were deposited at the bank.

Mr. DRAY said it was.

Mr. SIMPSON asked if there were any liabilities in connection with the new Act.

The SECRETARY replied that there were none. All the expenses since the Act was obtained had been paid out of the general account of the College, so that the amount stated remained in the hands of the Council for the Registration Account. Upwards of 2,000 persons had applied for forms.

Mr. CARTLEDGE then moved the adoption of the Report.

Mr. TAYLOR seconded the motion.

The motion was put and carried unanimously.

On the motion of Mr. TAYLOR, seconded by Professor PRITCHARD, it was ordered that cheques be drawn and paid.

The Supplemental Charter.

The CHAIRMAN said that at the last meeting it was decided that a Supplemental Charter should be sought for. A rough draft had been prepared, and it was for the Council to take it into consideration. The barrister who prepared the draft made an omission in page 3, not quite

understanding what was required. It arose in this way : it was suggested, in drafting the Charter, that members of the profession, either foreign or colonial, might desire to become members of the College—men who might have a high position in their own country. Such persons at present would have to come to this country to study for a period of six months before they could present themselves for examination. He knew of a very distinguished teacher who had come to England, and was anxious to become a member of the College, but would not submit to studying with the students, in order that he might qualify himself for examination, he himself being a teacher. It was therefore proposed in the draft to give the Council power to examine those gentlemen without their having to undergo a period of study at one of the schools. The Charter of 1844 stipulated that the student who presented himself for examination must have studied at one of the Colleges. The other points in the Charter were those which had been frequently discussed ever since he had been on the Council. He thought it was time to ascertain what their powers were, and fix them if possible. They were now not only a licensing body, but a protecting body. He thought, therefore, that the stipulation in the first Charter, that the examination fees should be ten guineas, might be altered, and that the College should have power either to increase the fees or allow them to remain as they were. There were a great number of examinations, entailing large expense, which was hardly met by the fees. He thought the College should have the power, even if it did not exercise it, to raise the examination fees in proportion to the expenses of the examinations, or to such an amount as might be deemed necessary, in order to cover the expenses of the examinations and to protect the practitioner while he was practising. It was his opinion that the Supplemental Charter should be obtained as early as possible.

Mr. TAYLOR wished to know on what ground the fees were to be raised. He had heard that they were to be increased to forty guineas, or even to a higher amount.

The CHAIRMAN said that thirty guineas was proposed as the maximum sum. The maximum of the present Charter was ten guineas, with one guinea registration.

Professor WALLEY said that Clause 13 in the Act allowed them to admit colonial veterinary surgeons or teachers as members ; they became to all intents and purposes members of the College.

The CHAIRMAN said that such was not the case. It was only with regard to practice and the claiming of fees in a court of law.

Professor WALLEY said he should strongly resist anybody interfering with the course he might take with regard to his lectures to the students. There was not a single fact upon which he did not touch during the course of a student's study. If a teacher failed to give proper instructions to a student it was his own look-out, but if it was done properly he did not see what right the Council had to interfere with it. The minimum age for condidates to be examined for the diploma was settled some time ago, namely, twenty years.

Mr. TAYLOR thought they had acted illegally in demanding what they had done already, viz., three guineas for each rejection.

Professor SIMONDS said he should like to know the names of the gentlemen who constituted the Parliamentary Committee, when they attended, and when they gave a draft for the Charter or had an interview with the lawyer to give him instructions for preparing the Charter. He must protest against the Charter being laid upon the table, as he had never received any intimation that the Parliamentary Committee was required to meet or that the matter of the Supplemental Charter would be considered. He did not believe any other members of the Parliamentary Committee had received notice of it.

The CHAIRMAN said it had been decided that a Supplemental Charter should be drafted, and that if Professor Simonds had not been absent from the meetings for so long a period, he would have known what business had been done by the Council.

The SECRETARY said that the last meeting of the Parliamentary Committee was on November 18th. He then read the minutes of that meeting.

Professor WALLEY moved "That the proposed Supplemental Charter stand over and be referred back to be properly considered by the Parliamentary Committee."

The motion was carried.

Notice of Motion by Mr. Simcocks with regard to Bye-Law 22.

Mr. SIMCOCKS agreed to let this matter stand over till the next meeting of the Council.

Board of Examiners.

Professor ROBERTSON asked if there were any law against professors in virtue of their office attending the meetings of the Board of Examiners.

Mr. GREAVES said that the Principal of the School ought to be in the room. Years ago intimation used to be given to the professors that the examinations were to be held, but that had been dropped.

Professor SIMONDS said it had been decided by the then existing Council that the Professors were at full liberty to be present at examinations.

Professor PRITCHARD proposed, "That intimation be sent to the professors informing them when the examinations were to take place."

Mr. GREAVES wished to know whether they were limited to the names of those who were nominated at the last Council meeting.

The CHAIRMAN replied that such was necessarily the case. It was decided by the Council that nominations were made at last meeting.

Mr. GREAVES said that he had been at three or four meetings, one in Yorkshire, one in Lancashire, and one in Liverpool, and they were unanimous in wishing that the Council should elect the examiners out of the profession only.

The CHAIRMAN thought it desirable to decide the question whether they were to abide by the nomination, or whether it was open to propose other names than those on the list.

Several having expressed their opinions, it was decided that other persons could be nominated.

The ballot was then taken, and the following gentlemen were appointed examiners :—

CLASS A.—Chemistry and Toxicology : for England, Professor Voelcker ; for Scotland, Professor Vaughan.

Botany : England, Mr. W. B. Walters ; Scotland, Mr. W. B. Walters.

Materia Medica and Pharmacy : England, Mr. F. Dun ; Scotland, Mr. F. Dun.

CLASS B —Physiology and Histology : England, Dr. B. Sanderson ; Scotland, Mr. W. A. Taylor.

Anatomy of the Horse : England, Professor Pritchard ; Scotland, Mr. Geo. Fleming.

Anatomy of other animals than the Horse : England, Mr. Duguid ; Scotland, Professor Vaughan.

CLASS C.—For England and Scotland.

The Horse : Messrs. Pritchard and Cox.

Cattle : Messrs. Duguid and Gresswell.

Morbid Anatomy : Mr. Geo. Fleming and Mr. G. A. Banham.

The SECRETARY read the obituary list.

Professor WALLEY consented that his notice of motion should stand over until the next quarterly meeting.

The proceedings terminated with a vote of thanks to the President.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE ordinary quarterly meeting of this Association was held at Red Lion Square, London, on October 30th. Mr. Fleming, President, was in the chair, and the following members were present :—Messrs. Barford, Southampton ; Hancock, Poplar ; Morgan, Ash ; Shaw, Hackney ; Simpson, Windsor ; Wragg, London ; Batt, London ; Hogben, Dover ; Brown ; Shaw, London ; Stock, Lewes ; Rock, Chislehurst ; Hogben, Folkestone ; Cawthron, Hadlow ; Broad, London ; Rowe, London ; Sampson, Mitcham ; Charles, London ; Axe, R.V.C. ; Penberthy, R.V.C. ; Walters, Aldershot ; Barton, Tunbridge Wells ; Lane, Eastbourne ; Edgar, Dartford ; Martin, Secretary ; Farrance, Eastbourne ; Gibbs, Bromley.

The SECRETARY read the notice convening the meeting. The minutes of the last meeting were read and confirmed. Letters of apology were read from Mr. Jarvis, Mr. Cooper, and Mr. Holman.

Mr. MORGAN exhibited a specimen of an ossified auricle.

Mr. EDGAR exhibited a specimen of fracture of the os coronæ. He also exhibited a tooth incisor, which, he said, obtained the maximum amount of power with the minimum of steel. It could be adapted to any position by simply twisting it, and was the most humane instrument he had ever seen.

The PRESIDENT proposed Mr. Wragg, of London, as a member of the Association.

The SECRETARY seconded the proposal.

Mr. BARFORD proposed Mr. Hancock as a member.

The PRESIDENT seconded the proposal.

The SECRETARY, referring to the specimen of the ossified auricle, said it seemed rather astounding that a horse could work with its heart in such a condition. Although it was said to be an ossific deposit, it did not seem to have taken on the perfect character of bone. It was very light, and unless it had been in some spirit he should hardly call it an ossific deposit, though it might be an abnormal deposit.

Mr. MORGAN said it had been in lime some time.

The PRESIDENT said of course that would make it lighter.

The SECRETARY said veterinary surgeons laboured under some disadvantage compared with human surgeons. In the case of the latter, the patient could explain his feelings, but a horse could not. Perhaps Mr. Morgan would describe the symptoms more fully.

Mr. MORGAN said the horse was bought as a six-year-old, and worked pretty fairly for a month or two, but always made a noise in drawing, and gradually got very short in his breath. His pulse, of course, was almost imperceptible at times ; but the owner—a carrier and farmer—worked him as long as he could. At last he (Mr. Morgan) looked at him, and said that it was Heart Disease. The horse was then turned out and got a little better ; but afterwards was found dead.

The PRESIDENT asked which auricle it was.

Mr. MORGAN said he did not notice, because the specimen was sent to him.

The PRESIDENT said it could not be true bone. He supposed it was simply an ossific deposit in the muscular tissue of the auricle.

Professor AXE said there was not a great amount of force in the auricle.

The PRESIDENT said the specimen was interesting from the fact that the animal had lived so long with such a change in a very important organ ; but the auricles were not absolutely essential to the due function of the heart. They were more receptacles of blood than anything else, and though they had a certain amount of contractile power with which to empty themselves into the ventricle, yet the latter were the main propelling portions of the heart. A specimen was sent to the Royal College of Veterinary Surgeons some time ago, which was the transverse section of a horse's heart, of which the auriculo-ventricular septum had become ossified, but the section was so unsatisfactory that nothing could be made of it. It was a pity they could not get these specimens in a fresh state with the muscular tissues attached, so that they could see the change that had taken place. In the present case he thought that the alteration was due more or less to rheumatism ; but very little indeed was known of the pathology of the horse's heart, and it was only when the animal died that they could discover the changes that had taken place. The difficulties of diagnosing heart affections in animals were very great ; and, therefore, the veterinary profession was at a disadvantage compared with medical men when dealing with maladies of that organ.

The PRESIDENT said that Mr. Simcocks, of Drogheda, had sent a letter respecting a very important motion which he intended to bring before the council of the Royal College of Veterinary Surgeons. The motion was to the effect that no medical man should be an examiner for the diploma of the Royal College of Veterinary Surgeons except the examiner in botany. The motion was brought forward at the last council meeting, but Mr. Simcox had written to Mr. Martin, asking him to lay the subject before the Association and to get the opinion of the Association upon it. The election of examiners for the next five years had taken place ; but Mr. Simcox, desirous of ascertaining the feelings of the profession through the Associations, had applied to them all. He had had responses from every one except the Southern Association. It was, therefore, for the Association to decide whether the subject should be discussed at the present meeting or be postponed.

It was resolved to postpone the consideration of the subject until another meeting.

The PRESIDENT read a paper on Actinomykosis,* in which he described this disease, apologising for the incompleteness of the paper, but supplementing it verbally as follows :—

The diagnosis, as you will see from the specimens laid before you, is not difficult when the disease is situated in any parts which are accessible to the eye. The nodules are peculiar, and I think no one could mistake them for the deposits of tubercle. The way in which they are embedded, the manner in which they grow, and especially their situation, all should afford us ample means of diagnosing the malady. As to the malady, there can be no doubt that it is due to the fungus exhibited, and the existence of which is abundantly demonstrated ; so many observers in Germany and Italy have been working at the disease, that there can be no doubt as to its pathology. But then the question comes, How do these microphytes get into the tissues ? Considering that the disease is always found in the neighbourhood of the digestive tract, there is reason to think that the spores may obtain entrance by the mucous membrane ; that they grow, and gradually invade the tissues. I think that is the only reasonable explanation that we can give for their entrance into the body. For some time it was thought that the disease was not inoculable. Dr. Bollinger attempted it, as also did others ; but they failed. Johne and Ponfick, however, have been successful, and the animals

* This paper will appear in next month's Journal.

showed the disease in its most active form ; therefore there is every reason to think that this is not only a specific disease due to a particular microphyte, but also that it is a disease which may be transmissible not only from animals to animals, but to men, or from men to animals. The disease has not been sufficiently long under observation to decide as to that, but among the sixteen cases recorded in German medical literature, Dr. Ponfick has described one of a man who was admitted to the hospital suffering from a diseased jaw. He had had a molar tooth extracted, and not very long afterwards very intense pain was set up in the jaw, and a tumour began to grow in the cavity left by the tooth. This tumour enlarged rapidly, suppuration took place, fistulæ were established in the bone, and ultimately the man died from the suppurative process extending to the vertebræ. In the pus Dr. Ponfick discovered the microphytes in immense quantities, and it was subsequently ascertained that the man had been attending a cow affected with the malady. This is the only case on record which might lead us to suspect that the disease may be transmitted from animals to man. With regard to animals affected with the disease, the ox appears to be the chief for harbouring these parasites ; but the pig has also been found to suffer very much from it, especially in the shape of tumours in the region of the pharynx and the parotid gland. And perhaps it may be discovered that the condition of pigs known as Scrofula has some relationship to this fungus. One case has been found in the horse, and another has been recently reported in the jaw of a dog. Then, with regard to the treatment, my object to-day is not so much to discuss this as to bring the disease itself to your notice. I have been extremely interested in the subject of Tuberculosis, and in studying that disease this might be said to be one of its offshoots. The papers published on Tuberculosis, and especially that supposed form which affects the mouth, led me to think that very often there were mistakes made ; and I was delighted to discover that a mistake had been made with regard to this same malady, because there is no doubt that in a great many cases it may be, and is, cured. Tuberculosis is, no doubt, a general affection, whereas this is local ; therefore, when the locality is within reach, and when the disease has not progressed too far, there appears very good reason to believe that it may be cured, if taken in time. With regard to the pharyngeal form of the disease, I may mention that these tumours may be removed by operation, as we all know. With regard to their frequency, they appear to be extremely common in Germany, because I find that Herr Meyer—a veterinary surgeon in that country—in the course of twelve years' practice, had operated on no fewer than 300 cases of these tumours. His method of operation was simple : contriving to get the mouth held open, he used no instrument, but with his finger-nail scraped through as much of the tumour as he could at its base, and then twisted it or had it torn off. A large number of his cases did well. But other cases have been more difficult, especially those in the larynx ; but Dr. Siedamgrotzky removed a tumour from the larynx, which was not accessible to the hand through the pharynx, and the animal survived. It has been suggested that in man the operation might be successful in a number of cases. Of course we cannot be supposed to be successful when it comes to resection of an animal's jaw. Knowing the great importance of mastication, and the expense which would attend such a serious operation, it would never pay to remove any important portion of the jaw of an animal. It has been suggested that where we have the fungus disseminated through the tissues, medicaments that would destroy it might be employed ; but that is a matter for future study. In the meantime, I have brought the subject before you, and venture to show you some very interesting macroscopical and microscopical specimens. I only regret that the tongue first sent us was too much cut about to be exhibited. The tongue now shown is affected with the

disease in a very early stage, the extremity being chiefly involved; nevertheless, there is a great number of nodules in it. In the two other specimens you will find the disease in a very extraordinary situation, and I cannot discover among the writers I have been hunting up any mention of it affecting the nasal chambers. You will find in one specimen an immense aggregation of these nodules—some like warts. As you are aware, Mr. James and others have been successful in curing a number of cases where the disease has been confined to the tongue, by digging or scraping out the growths, and treating them with strong caustics. These animals appear to have done well, which shows that there is no constitutional affection, but that the disease is entirely local. I think it is an interesting malady, and I fancy in Lincolnshire, where wens on the neck and diseased tongues are very common, we shall get plenty of specimens which will still further illustrate and elucidate the disease. The fungus is like a mulberry, when in mass. It appears to grow in clusters, but when not pressed it is entirely globular, appearing like a ball surrounded with small projections. We do not know much of the morphology of the fungus, or of its history; but from the disease appearing so frequently in the ox, there is reason to believe the fungus is obtained from the food the animal eats. It must obtain access to the pharynx, penetrate the mucous membrane, and there grow.

Professor AXE made the following remarks:—I have to thank you, sir, and the Southern Counties Veterinary Medical Association, for being permitted to be present here to-day. More especially my thanks are due to you, sir, for having brought before us such a mass of very important information. There are few subjects, perhaps, in pathology which are deserving of more serious attention than those of zymotic diseases, and our Chairman has contributed to the pathology of these affections a very considerable amount of interesting matter in one shape or another, as is testified by the pages of the Journal over which he presides. I have a special interest in this particular affection, insomuch as it is one to which I have directed my attention during the past ten years. It has, on numerous occasions, been brought to my notice by veterinary practitioners in various parts of the country, and I have devoted a very large measure of time and trouble in endeavouring to arrive at a conclusion as to its precise pathological nature, and more particularly as to its etiology. In 1877 I commenced a series of articles, two of which appeared in the *Veterinarian*, headed: "Some Remarks Tending to Elucidate the Pathology of a Disease occurring in the Tongues of Oxen." It is to this special disease that those remarks referred. Notwithstanding that I was able to collect a considerable amount of clinical information, and, at the same time, able to work out the pathological changes which belong to the disease, I found it necessary to dwell, before attempting to explain its nature, upon the fact that there appeared to be wanting this particular link to which the President of your Association has referred, namely, the active agent in the production of the disease. The negative pathological testimony was perfectly obvious to me. That it was not as it has been termed—cancer—was clear: that it was not tubercle was obvious; that it did not belong to the sarcomata was also obvious; but the question to my mind was, What did it belong to? Where was it to be placed pathologically? This was the vexed question in my mind. I may here show some specimens which will serve to illustrate the remarks made by your President, and perhaps to give you a clearer physical view of the pathological changes which take place. I think that diagram was made in 1875 or 1876, and about the same period that section was also delineated. [Diagram.]

Here are some microscopic diagrams which I have scraped up from my portfolio, which have been kicking about five or six years, but which clearly

depict the lesions which illustrate this particular fact. I have here one or two microphyte specimen sections which were made at that time, and which, when placed side by side with those which have been produced by our President, will clearly show you the identity of the affection. I may note, in explanation of the failure which I appear to have suffered in this investigation, that the objects in the preparations which I have placed before you show this fungus, not in that sharp outline which would enable one to grasp its peculiar form and character, but they appeared to me as little, yellowish, more or less rounded or globular bodies, rather giving the impression that they might be calcareous particles, or some sebaceous masses; but I failed to make out the peculiar morphological character of the masses. You will see, therefore, this is not a new disease. The simple question about it has been its etiology—from what did it arise? That is the link which has been supplied to-day. We are perfectly familiar with every phase of it—clinical, pathological, and histological—in this country, and have been so for years, but we have failed to mark out the particular organism to which it has been due. I may make one or two more remarks in reference to it in regard to the articles to which I have referred. I collected a number of data, and it is very singular that some of the information which I recorded in the *Veterinarian* in 1877 was derived from the same gentleman who has been good enough to furnish the Brown Institute with the tongue before you. Captain Russell also supplied me with a considerable amount of information. I submitted to him and to others a series of questions by which I endeavoured to arrive at some conclusion as to its causation. Captain Russell, or one other of the gentlemen with whom I communicated, thought it might possibly arise from the fact of the animals feeding on barley straw. Now it is quite possible that something may turn upon this. Barley straw, we know, has within it those irritating objects or masses which are capable of setting up a certain amount of irritation in the mouth, and it is a question whether a surface lesion is necessary to the invasion of this fungus, whether certain substances may so irritate the surface of the mouth as to expose the tissue element to the invasion of the fungus. One answer I received, among others, was suggested, I think, by Mr. Goforth Wyer, that possibly frozen turnips might have something to do with it. One can understand that animals eating frozen turnips in a condition capable of incising the tongue, producing abrasions on the surface of the mucous membrane, may lay down those conditions for the invasion of the fungus. Whether this be so or not, it is quite a matter for future experiment. I think Mr. Verney also at that time sent us up to the College two animals for experimentation. One of those animals we watched carefully throughout the ailment without its being submitted to any special form of treatment, but the other we had to destroy. We allowed at that time a young calf to cohabit with these two animals, with the view of determining as to whether the disease was capable of being transmitted. However, so far as that single experiment was concerned, it proved negative. The calf did not become affected. Of course one experiment is of little avail in such a question, but it is one amongst the many which will tend to elucidate the capability of the disease being passed from one animal to another. Another experiment was that of inoculating an animal with matter removed from the tongue of one of the beasts; but that also failed to communicate the disease to the animals inoculated. There is another matter to which attention has not been directed in this disease—that illustrated in this diagram, noting the histological character and the changes taking place in the tissues of the tongue. I have marked out on the diagram a muscle fibre containing an S. . . . in longitudinal section and another in transverse section. Those organisms I found almost invariably associated with the microphyte referred to as the causation of the malady. Therefore, it is true that a considerable

amount of light has been thrown on the etiology of the affection by the able paper read by the chairman ; but so far as the pathology of the disease is concerned I think we are quite familiar with it. We have in the diagrams the histological changes delineated ; we have the course of the pathological changes also delineated, but notwithstanding that we had two microphytes under our eyes we failed to recognise it. There is just another point which I should like to remark upon, and that is the condition of this tongue on the table. This tongue does not give us any of those early changes which are peculiar to the disease, that is to say, where we have the tubercular formation studding the surface and invading the surface of the tissue. It would appear to me that this tongue manifests all those chronic lesions which time has induced and which resolution has brought about. The caseous nodules which have been here have been dispersed, and the tissues have been so far resolved ; but we have left, as a consequence of that resolution, a considerable amount of induration of tongue. The ordinary characters are well depicted in the diagram, which shows the nodular excrescence on the surface of the tongue. I think it is very likely that it will be found out that there are certain localities which are very highly disposed to it, especially the fens of Lincolnshire, Cambridgeshire, and similar districts.

Mr. SIMPSON said that in his experience there was very little of the disease in the locality of Windsor, although he had seen one or two cases, and also some cases in which the bone had been affected. He had not, however, given that attention to the subject that possibly he ought to have given. When the disease affected the bone there seemed to be little probability of curing it.

Mr. STOCK said he had lived in the counties of Cornwall, Somersetshire, Wiltshire, Dorsetshire, and Sussex, and in every one of those counties he had come across specimens of this disease and animals suffering from it. What he had heard at that meeting, however, had thrown a flood of light on the disease. He had formerly looked upon it as a purely local affection, not having anything to do with the constitution of the animal, and he never dreamt of attributing it to these organisms. In treating it locally he found that if he had removed the cheese-like deposits in any way and then applied a solution of alum, the animal did well ; but in many cases, of course, it would not yield to that treatment. It all depended on the time during which the animal had been affected. During the last twelve months he had had two cases : one was that of a young animal about eighteen months old which was very much emaciated and would not feed. The breath smelt very offensive, and on examination he found on the tongue perhaps a dozen of these sores, but they yielded to the alum treatment and good diet. About a month ago he had another case—that of a two-year-old heifer. He had to inspect her because it was thought to be a case of Foot-and-Mouth disease, as the tongue was protruding from the jaw and produced a discharge of saliva. Upon examination, however, he found that it was a case of this disease. The animal had been exposed to the weather some considerable time before he saw her, and that had induced Inflammation of the bowels and Diarrhœa, from which she died, and he had not the opportunity of examining the tongue after death. He had seen many cases of so-called wens in Lincolnshire, but he failed to connect the two diseases. He had also seen wens in animals' necks without sores in the mouth. He had thought that they were two distinct diseases.

The SECRETARY said that Schirrus or indurated tongue was frequently met with in country practice. Continental veterinarians seemed to be more scientific than the English. He had no doubt that many cases had been condemned as Pleuro-pneumonia, which were simply Tuberculosis, and he confessed that he committed the same error until he saw the article on

Tuberculosis written by Mr. Fleming. He had no doubt that the paper would have the effect of attracting the attention of the profession to the disease. Before Mr. Fleming's article on Tuberculosis appeared he had been in the habit, after condemning cattle for Pleuro-pneumonia, of going to the butchers and seeing the lungs, and he saw the particular growths and was quite in a fog about them ; but Mr. Fleming's article enlightened him considerably, so that now he could detect at any time the difference between Pleuro-pneumonia and Tuberculosis. The Schirrus tongue bothered veterinarians very much in practice. For instance, a practitioner was sent for to see a bullock. He noticed the swelling under the jaw, the tongue protruding, and the discharge of saliva, and on examining the tongue he found the whole substance very much enlarged and indurated and tender. He could understand Glossitis, where there was redness of the buccal membrane, or redness of the tongue, with very great pain, and that it might be produced by irritants, such as barley, straw, and frozen roots ; but these cases occurred in the summer when the animals were fed on grass. As regards the cure of the disease, he had tried every kind of treatment. Of course, Glossitis would yield to treatment with the aid of antiphlogistic measures, but in some cases he had applied stringent lotions, inserted setons under the jaw, and scarified the tongue, and done all sorts of things, but he had no hesitation in saying that in no case would the Schirrus tongue yield to treatment. Whenever there was a case of chronic Schirrus tongue he always recommended the animals to be killed. The fact was, if the animals were allowed to live and waste away in flesh, the reputation of the veterinary surgeon would be destroyed, because if the animal had no flesh on it it would die from inanition. In consequence of the enlargement of the tongue, it was unable to gather the food and to pass it from one side of the mouth to the other for mastication. He had recommended giving liquids, such as gruel with beer, but they could not keep a bullock alive in that way. It was the pathology of the disease that put them in such a tremendous fix. When a person asked them what caused it they might say, "Oh, it is a Schirrus tongue—a hard tongue." "Yes," would be the reply, "but do you know what the cause of it is?" Then the practitioner would be in a fog. Mr. Fleming's paper would stimulate them all to thought, and they would no doubt go to work and investigate the disease. In making a dissection of the tongue, he had found these yellowish bodies, but never knew what they were. At the Veterinary College they were never taught what these granular yellowish tubercles were or the cause of them. Mr. Fleming had spoken of the disease affecting the bones, but he (Mr. Martin) had always found it confined to the tongue itself. He had seen tubercules in all parts of the body. At one time he thought the tongue disease was cancerous in its nature.

Mr. MORGAN said he had two or three cases of the disease in the course of a year, and his experience bore out what Mr. Martin had said—that it was always confined to the tongue, and was not amenable to treatment.

Mr. SAMPSON said he had met with two cases of the disease—one was a milch cow. The whole of the tongue was not affected, but there were about twenty yellowish spots on it, with a sort of yellow cheesy matter surrounding the spots a quarter of an inch thick. For the first few days he did not make up his mind as to what was the matter. At first the people thought it was a case of Foot-and-mouth disease, but he was certain that it was not. He advised that the tongue should be mopped out, night and morning, with a solution of carbolic acid. He then tried strong solutions of chloride of zinc, and under that treatment the cow was kept for fourteen months. Then she met with an accident, fell into a brook, and was killed. She was never cured, but she was better. The saliva stopped dribbling from her mouth, and she milked fairly well. The other case was that of a two-year-old bullock which

was being fatted. It was a more severe case. The greater part of the length of the tongue was affected, and also the left-hand side. He took a great deal of trouble with the case. It belonged to a rich butcher and farmer, and as it was a favourite bullock he would not have it killed, but kept it for three years, feeding it on pulp, but he could never do any good with it.

Mr. HOGBEN wished to know if any member of the Association could state whether the disease was amenable to treatment or not. He had one case of indurated tongue, and certainly no treatment succeeded, and the animal was slaughtered. He also wished to ask whether the tumours described by Mr. Armitage in his work on "Cancerous Tumours of the Jaw" was a similar or identical affection.

Mr. SCOTT said there were many other diseases of the tongue which might be mistaken for that which they were discussing; for instance, Chronic Glossitis or Inflammation of the tongue. That would be perfectly incurable. An animal would not be able to gather its food or to swallow; but he had seen instances of young animals in which these cheese-like deposits about the tongue had been cured and the animal had been fatted.

The PRESIDENT, referring to the pleasure he experienced in having brought this subject first to notice in this country, through the medium of their Association, remarked, with regard to the treatment, that of course we must look at the pounds, shillings, and pence aspect of the case. When the disease has invaded the bones to a large extent, or the soft tissues of important organs, like the tongue or the heart, of course treatment is out of the question, because, as he said before, however much praise a surgeon may get for performing a very serious operation, if it takes a long time to recover, the veterinary surgeon would certainly not get that praise; therefore treatment in the majority of these cases, he was afraid, is rather to be ignored, because if an animal is attacked by the disease, and if the disease has advanced to a certain stage, it would be the most profitable plan to send it to the butcher. Nevertheless, that the disease is amenable to treatment in certain forms and stages is evident.

The PRESIDENT then said that the Veterinary Congress, which was held in London last year, was such a success that it was determined that an Association should be formed with the object of holding meetings of the entire profession at certain periods, and with certain definite objects. For that purpose the representatives of the various Medical Associations throughout the country met during the past week, to answer certain questions which had been placed before them. The questions were, first, as to whether a National Veterinary Association should be formed. That was decided in the affirmative. The next question was as to its objects. They were defined. The next question was as to the officers. They were settled. The next was as to the times of meeting. It was decided that a meeting should be held every three years, the first to be held in London on the day after the annual meeting of the Royal College of Veterinary Surgeons next year. It was also resolved that the succeeding meetings should be held in different parts of the country; and in those parts where the meeting was held, the Local Society should organise the details as far as possible. As the meeting was to be held in London next year, it was settled that the Southern Counties Veterinary Medical Association and the Central Veterinary Medical Society should take charge of the details. The President and Secretary of the Central Society, who were present, promised to lay the subject before the Society, and it now remained for the Association to select a sub-committee to assist in making the arrangements.

Mr. Simpson, Mr. Edgar, Mr. Martin, Mr. Barford, Mr. Gibbs, Mr. Walters, and Mr. Farrance were appointed as the sub-committee.

On the motion of the Secretary, seconded by Mr. Cawthron, it was decided to hold the next meeting in March, 1883, at Redhill, Surrey.

Mr. EDGAR promised to read a paper at the next meeting, on Swine Fever.

Mr. BARFORD proposed a vote of thanks to the President for his excellent and elaborate paper.

Mr. WALTERS seconded the motion, which was agreed to.

The PRESIDENT thanked the Association for their recognition of what he had done. He had, he said, a peculiar pleasure in bringing before his colleagues anything that was at all likely to promote their professional knowledge, or their scientific treatment of disease. In conclusion he proposed a vote of thanks to Mr. Batt for the trouble and care he had taken in preparing the microscopical specimens.

Mr. FARRANCE seconded the motion, which was agreed to.

Mr. BATT acknowledged the compliment, and the proceedings terminated.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE last quarterly meeting for the year was held in the Queen's Hotel, Leeds, on Tuesday, the 24th October, the President, Mr. Jos. Freeman, in the chair. The following members were also present, viz.: Messrs. Jas. Freeman, T. Greaves, Jos. Carter, J. W. Anderton, J. H. Ferguson, J. M. Axe, J. Atcherley, G. Schofield, J. E. Scriven, John Tatam, H. Snarry, G. Whitehead, D. Spillman, W. F. Greenhalgh, H. Cooper, and the Secretary.

Messrs. P. Carter, Bradford; Wm. Noar and Jas. Kirkman, Manchester, students, were present as visitors.

Excuses for non-attendance were received from Messrs. Dray, Fryer, Danby, Bale, Peter Walker, John Freeman, Hardie, and Geo. Carter.

The minutes of the previous meeting were read and confirmed. Mr. Broughton proposed Mr. W. F. Greenhalgh, Leeds, and Mr. H. Cooper, Huddersfield, as members; Mr. Ferguson seconded. Carried unanimously.

Mr. CARTER nominated Mr. An. Briggs, Halifax. Mr. TATAM nominated Mr. Harry Carter, Bradford.

The SECRETARY introduced the subject of the Fleming Testimonial; several subscriptions were paid to the Secretary, and transmitted to the Treasurer of the Fund.

Mr. TATAM withdrew his resolution regarding the fixing of the Examination fee at one guinea; Messrs. Jas. Freeman, Atcherley, Snarry, and Spillman stated that they always charged one guinea.

Mr. GREAVES then submitted the following paper for discussion—a case of "Purpura Hæmorrhagica, or Blood Poisoning, with comments":—

"In following our ordinary occupation as veterinary surgeons, we now and then meet with cases out of the ordinary way, and those members having had large and long experience may have met similar cases before, and memory comes to their aid; but better still if the practitioner has made a practice of recording them, for then he can refer to such cases, and often the knowledge and assistance thus obtained is most useful to him should a like case recur again.

"I wish, now, to refer to a case of mine, which I had under treatment some years ago in the month of March. I looked upon it at the time as one simulating some of the characteristics of Purpura, but I felt then, and still feel, that it is hard to classify it in the same category; there was a mass of obscure phenomena—a variety of unexplained disturbances which are not easily defined or explained.

"*The Case.*

"This was a grey mare, rising four years old. She was in good condition, and apparently in perfect health. She was fired for curbs—fired standing—and tar-ointment applied, which was my custom. She had from a filley fed on good keep—beans, oats, bran, and chop. Generally she had been in high condition, which I think had much to do in creating that unhealthy state which now became aroused and developed. Nothing particular was noticed about her for the first two days; she was tied up the first night after the operation and was very quiet; after this she had her head, and allowed to run loose in a box. On the third day after the operation it was observed that there was a discharge from the off-nostril, and she was rather feverish; she had her head steamed and the throat blistered, and fever medicine given; in a few days the discharge ceased and the fever subsided, but about the seventh or ninth morning after the firing she was found very lame from a large swelling over the near stifle-joint—it was accompanied with great tenderness and pain. She was blowing, perspiring, and in a high fever; the swelling had come on suddenly, and without any apparent cause; at the same time the legs became somewhat swollen, the fired curbs looked very angry. We fomented the swelling, and gave Aloes ʒiii, which purged her. This swelling subsided in three or four days, the swelling having burst, and an unhealthy, slimy discharge escaped; presently this healed, but in the meantime other swellings made their appearance—for instance, one upon the front of the face, the size of a man's fist, and three or four others, the size of hens' eggs, down the arms and thighs. She was now exceedingly stiff, and, if forced to move, would throw up first one hind leg and then the other, then a fore leg, in very great pain. During all this time she was in a high state of fever; pulse hard and 72; breathing very much accelerated; the membrane of the nose covered with red blotches, or in a state of ecchymosis, or covered with petechial spots. At one time the discharge was streaked with blood; upon the whole she appeared in as unhealthy and inflammatory condition as could be imagined. This would be the 12th or 14th day after firing. She had had frequent doses of alterative and diuretic medicine, or linseed oil; her appetite was tolerably good. She had had several doses of Calomel, and I now bled her about four or five quarts, and gave her Aloes ʒij, which purged her; the skin of her heels cracked and became very sore, and from the lower parts of her legs a greasy fluid commenced oozing in considerable quantities. You might scrape the skin gently with the back of a knife and the fluid would pour down the legs. Not only the skin of the heels, but the front of the pasterns, up to the knees and the hocks, were in this state; sometimes the blood would actually exude through the skin like a sieve. I had employed warm fomentation for twenty minutes to each leg twice a day, and nice poultices made of oatmeal or linseed meal and bran; the skin of the legs became covered with a good thick scab, and was exceedingly tender. The intense suffering my patient endured can scarcely be conceived. I had used Arnica lotion, lime-water, and linseed oil, palm oil, white lead ointment, etc., fed her on grass, carrots, swedes, linseed and oil cakes, etc. She had become very reduced during these twenty days' suffering; all the swellings had subsided excepting in the legs. I used Alum ʒij, in a bucketful of water: this did harm. I tried, externally, spermaceti ointment, marsh mallows, white wax, glycerine, and linseed meal, dissolved gum opium, and then Fullers' earth. Internally, I gave an occasional dose of Aloes ʒij and Calomel ʒj. She has been carefully put down on a good bed of straw daily, then carefully raised to her feet. It is now six weeks since she commenced—pulse has been 72-80 beats per minute all the time. I continued the Fullers' earth and poultices and Aloes

3i daily. From this date, April 30th, she improved fast, appetite improved, and became good, pulse lowered to 44, the bowels kept getting out of order, and required Aloes or oil every other day. On May 20th, two months after the attack, all the swelling had subsided, the hair coming on fast all over her legs, excepting the front of her hocks and back of her knees. Up to October 23rd she continued doing well, had become in good condition, and was working well. I occasionally saw her for years after—she kept in good condition and good health.

"*Remarks.*

"The above case will bear pondering over; it shows what can be done when nature is judiciously assisted. The care and attention exercised is, perhaps, more than is generally employed. Some horses are not worth it, but let us confine our inquiry to the nature of this case. Was the system tainted with some morbific matter before the firing, and the firing set up a ferment? Had the white corpuscles escaped through the walls of the capillaries? Or was it a case of Pyemia, and thus creating an obnoxious matter in the blood? In either case, it appears to me, there was a non-fulfilment of essential condition in the animal economy, and it was an absolute necessity that this poisonous or deleterious matter must be eliminated, or else the vital organs would be interefered with to such an extent as to be destructive of life itself."

In the discussion which followed, the principal topics argued were, What are the distinctive pathological conditions of the blood in these cases? What are the causes giving origin to these affections? What is the pathological difference between Purpura and Scarlatina, and the best method of treatment to be adopted? Messrs. James Freeman, Joseph Carter, Axe, Snarry, Tatam, the President, the Secretary, Mr. Greaves, took part in the discussion.

The Treasurer (Mr. Ferguson) submitted the Annual Financial Statement, showing £117 5s. 10d. to the credit of the Society.

The election of officers for next year resulted in Mr. J. M. Axe, Doncaster, being elected President; Messrs. Joseph Freeman, ex-President, Joseph S. Carter, and H. Snarry, Vice-Presidents; the Secretary and Treasurer being re-elected.

Mr. JAMES FREEMAN proposed, and Mr. AXE seconded, a vote of thanks to Mr. Greaves for his kindness in introducing a subject for discussion. Carried unanimously.

Mr. GREAVES proposed, and Mr. CARTER seconded, a unaminous vote of thanks to Mr. Joseph Freeman for his service in the chair.

Refreshments, by invitation of the Leeds members, were provided at the conclusion of the meeting.

IRISH CENTRAL VETERINARY MEDICAL SOCIETY.

A SPECIAL meeting of the above Society was held in the Grosvenor Hotel, Westland Row, Dublin, on Thursday, the 16th November, when the following gentlemen, members of the Society, attended:—Messrs. John Malcolm, V.P., Enniscorthy; T. H. Simcocks, V.P., Drogheda; L. Hunter, J. Freeman, G. B. Miller, W. Pallin, Curragh Camp; J. D. Lambert, I.V.S., Army; J. J. Sperring, Hon. Sec., and a visitor.

The business on the paper was: Election of officers for the ensuing year, a ballot for a new member, and a paper by Mr. John Freeman, jun., of Kingstown, on "Influenza." In the absence of the President, who was confined to his bed from the effects of an accident, Mr. John Malcolm, V.P., was moved to the chair. The minutes of the previous meeting were read and signed, and some correspondence laid before the meeting, including letters of apology from Messrs. R. H. Bird, Limerick; W. C. Josephs, Dublin: T.

L. Simcocks, Drogheda ; T. H. Prior, Parsonstown ; M. Hedley, Veterinary Department, Dublin Castle ; A. J. Kelly, Dublin ; James Young, Newry ; J. H. Asher, Cork ; James Preston, Mallow ; John Bell, Clonmel ; F. F. Collins, Dublin ; G. Newson, Arklow ; and S. Adamson, G.V.S., Greenore.

The name of Mr. John H. H. Peard, of Cork, was submitted for ballot, and that gentleman was duly elected as a member, and Mr. H. J. Kelly, of Ballina, was proposed. Officers were elected for the coming year as follows : Mr. John Malcolm, President ; Messrs. L. Hunter, W. Pallin, J. D. Lambert, Vice-Presidents. The Hon. Secretary and Treasurer, Mr. Sperring, was re-elected.

On the motion of Mr. Sperring, seconded by Mr. Pallin, it was resolved that Mr. T. D. Lambert, the outgoing President, be elected an honorary associate of the Society, in recognition of his services in its behalf, and his having been the first occupant of the presidential chair.

The newly-elected officers returned thanks for their election, and severally expressed their intention of doing all in their power to further the interests of the Society. Mr. J. D. Lambert said he believed the time would come when any Irish practitioner who had the interests of his profession at heart, would consider it to be essential to his professional dignity to be an active member of the Association ; and Messrs. L. Hunter and W. Pallin expressed themselves in similar terms.

The CHAIRMAN then called on Mr. John Freeman, Kingstown, to read his paper on "Influenza."

He read as follows :—

INFLUENZA.

Mr. President and Gentlemen,—In appearing before you this evening in the capacity of essayist, I feel honoured ; and although I may not have, in the brief time at my disposal, anything new to offer for your sideration, still I may at least, by promoting a discussion, succeed in eliciting information.

The subject I am about to introduce is one of vast importance, not only to us as veterinary surgeons, but to the public generally. To the veterinary surgeon, because no disease that I am acquainted with offers more food for earnest thought, or more scope for scientific research to the general public, on account of the havoc it causes amongst their horses, and consequent loss. Gentlemen, the disease I refer to is Influenza.

The name "Influenza" we get from the Italian physicians, as they looked upon it as due to some occult influence, whether planetary, atmospherical, or telluric ; we have also many other terms signifying the same disease, such as Distemper, Epidemic Catarrh : on the continent it is designated Pulmonal Typhus and Horse Sickness.

The disease appears suddenly amongst us, giving no indication of its origin, and spreading rapidly from one stud to another. Our thoughts, then, must surely be directed towards its infectiousness. What is its cause ? on what agency does it depend ? And how can we prevent its spread ?

Is Influenza infectious ? Some believe it is not ; but I am convinced it is. Certain it is, that upon our opinion concerning this question will our idea of the whole nature of the malady hinge, for were it not dependent upon any specific organism for its production, and not by this means passed from one animal to another, we might look for its cause solely to disturbances in the forces of nature around us—in the electrical or other condition of the atmosphere acting on the nervous system. In such a case the disease produced would not be transmissible ; we should neither trace its appearance to the advent of a particular animal, as in some instances we now can, nor should we find in the location, definite course, and mode of dissemination of the disease those facts wh ch impress upon the minds of most of us the conviction of its infectious nature.

Grant it this attribute, and it follows that we must look for its cause to some contagium ; there must be an invasion of the system by a specific infecting organism, which, finding a congenial *habitât*, reproduces agents of like virulence, and powerful to produce identical symptoms in animals of the same species.

We frequently find this disease occurring after an unusual state of the barometer. Such changes produce a state of system favourable to the epizootic, possibly have some effect upon the contagium itself ; this would imply that the germs of the disease are around us, lying in wait for circumstances favourable for their development. Is it improbable ?

Infectious diseases have long been considered to owe their communicability to a specific form of matter excreted from the body. Recent investigations have proved the offending agent to be among the more or less easily distinguished solid particles contained in the virulent secretion or discharge. Since the discoveries of Pasteur and Tyndall, these bodies have been termed " germs," and these are of many forms—such as Bacteria, Baccilli, Micrococci, Vitriones, Spores, etc. ; their extreme minuteness is a great obstacle to their investigation by an ordinary practitioner. Disease germs arise solely from pre-existing germs, and do not spontaneously result from tissue changes. In many of the specific diseases a special organism has been identified, isolated, and experimented with, and it is found that the products of any one kind of germ will cause, on inoculation, the disease in which the original germ was reared ; consequently, each disease has its own special germ. These germs may find their entry to the animal in many ways, as by transmission through the mucous membrane of the air-passages, alimentary tract, or through wounds or abrasions of the skin. After invasion, the different kinds vary in their mode of procedure ; some run a definite course, and then become eliminated from the system ; others never leave the animal free from their presence, even though there is apparent recovery from the disturbance they produced. Disease-organisms received into the system do not at once give rise to untoward symptoms; a period of incubation ensues, during which growth and multiplication of the agent progresses.

Returning to our subject, Influenza may be defined to be a peripheral indication, manifested through the medium of the olfactory nerves, of a centric irritation of the cerebro-spinal system. (The weak heart, depressed temperature, laboured breathing, and other evidences of depression may be thus accounted for.)

The disease is the result of the introduction into the system of a specific poison, which multiplies itself during the malady. It is propagated by infection, breath, and general emanations from the body, and it is a specific catarrhal inflammation of the mucous membranes of the air-passages, with severe constitutional disturbance. It is frequently epidemic, early implicating the naso-laryngo and bronchial mucous membranes.

Sudden changes of temperature appear to assist the development of the influenza poison, and exposure to cold predisposes the animal to the disease ; but neither of these causes is sufficient of itself to produce it. Whatever the specific material may be, it must exist in the air ; it cannot be in the food or in the water. This conclusion leads us to two suppositions : 1st, that the agent is reproduced either in the air or in the bodies of the sick ; and upon this point Dr. Parkes makes the following observations :—

" It must be a specific agent of some kind. From the earliest times authors have come to this conclusion. The similarity of the symptoms in different epidemics show that this agent is the same in its successive invasions. If it be connected with any unusual meteorological or atmospheric condition, this had not been detected, and it cannot be at present even guessed at. At the same time, this agent must be in the air ; the

diffusion is too rapid to suppose it to be conveyed by water ; besides, water-poisoning is usually localized. It cannot be attributable to food. There remains only the air as a medium of communication, and that this is so seems also shown by the way in which it can attack vessels at some distance at sea. There is, then, some special agent in the air. This cannot be a gas; no gas could spread in this way without utter dispersion and destruction. Nor can it be any molecular matter driven through the air, arising from some unknown telluric source, for this would be equally diluted and dispersed. The agent evidently cannot own one single and primary origin. It may, indeed, issue from one spot, but all the phenomena of its spread show that it must in its transit reproduce itself ; otherwise, if a gas, it must be rendered innocuous by dilution ; or, if an organic matter, by oxidation ; if a suspended mineral matter, by subsidence. It must increase, and if the subject is gone into, the more fully will the idea gain upon the mind that there must be a continual reproduction of the agent to a greater or less extent in different places."

The predisposing causes are crowded, damp, ill-ventilated stables, bad food, and overwork ; but no amount of care will exempt them from it, as it appears in the stable of the nobleman as well as that of the poorest carter. As many diseases of very different kinds have been described under the head of Influenza, I wish to state before proceeding with the symptoms, that those symptoms I will enumerate are of Influenza according to my definition.

Symptoms.—Sudden attack, often without any premonitory symptoms. Extreme listlessness and prostration. When in the stable the animal stands almost immoveable, the limbs fixed, and can only be displaced with difficulty. The eyelids swollen, and appear to cover the eyes ; tears course down the face; head carried low ; stupour and indications of headache ; rigors ; weak, compressible pulse, sixty to seventy per minute ; heart's pulsations very perceptible ; respirations hurried, shallow, and difficult ; sore throat ; painful cough ; parotideal and sub-maxillary glands tumefied ; the coat dry and staring ; legs, ears, and nose cold ; the Schneiderian membrane is dry and red ; temperature 102° to 105°. These symptoms continue for two or three days ; the discharge from the nose becomes flaky and profuse ; conjunctivæ of one or both eyes may be inflamed, and vision may be impaired. As the disease advances, the cough becomes deep, sonorous, and painful ; there is great soreness of throat, and inability to swallow food or drink, indicated by quidding of the food. The fæces are dry, hard, and often covered with mucus ; the urine high-coloured and scanty, often tinged with bile, sometimes opaque. About the fifth day the symptoms abate, the cough becomes loose, pulse improves in tone, heart becomes less jerky, and the appetite commences to return. The leading character of the disease consists of an inflammation of the naso-pharyngeal mucous membrane, and the secretory organs participate in the disease. Dropsical swellings appear on the belly, legs, and chest, due to the debility of the circulation. Should Bronchitis supervene, it is indicated by the heaving of the flanks, dilatation of the nostrils, and great difficulty of breathing ; rapid pulse. On auscultation, we detect rough inspiratory murmur over the lower part of the trachea, also behind the scapula, with sibilant *râle* over the greater part of the chest. The visible mucous membranes become livid, and the animal is in a semi-torpid state from the action of the non-oxidized blood on the brain and medulla oblongata ; the discharge from the nose is scanty, and often tinged with blood ; unless relieved, the animal sinks about the sixth day. The pneumonia of Influenza is characterized by the rapidity of pulse, the dull soft cough, crepitation on auscultation, cold extremities, and dulness on percussing the lower parts of the chest. True hepatization of the lung in

Influenza is a rare occurrence, the exudation being more serous than plastic; and in consequence of the asthenic nature of the inflammation, there is a tendency to gangrene and disintegration of the lung tissue, characterized by fœtid breath and cold sweats, rapid emaciation, and death. Pleuritis is frequently associated with the pneumonia. Colic is not an unusual accompaniment, showing sympathy with the catarrhal form.

Towards convalesence, rheumatic complications often appear; the animal becomes restless and uneasy; the joints commence to swell, and emit a crackling sound on movement. The inflammation may localise itself in some muscle or tendon—generally involving the faxors below the knee and hock, which causes severe lameness that remains for a long time.

Prognosis properly treated rarely fatal.

Treatment.—Influenza, like all other specific diseases, runs a definite course, and medical treatment can in no way cut it short. Consequently, the aim of the practitioner must be to relieve the distressing symptoms, support the strength, and allay the irritability.

The primary and most essential treatment consists in placing the animal in comfortable quarters, having him properly clothed and bandaged, supplying him with light and easily-digested food—such as bran-mashes, boiled barley, oats, or linseed, never forgetting to allow an abundance of cold water, in which some Pot. Nit. should be dissolved. When the cough is troublesome, a stimulating liniment or blister should be applied to the throat, and inhalations of the vapour of warm water afford much relief, while the nasal discharge is matured. When prostration is very marked, Spts. Æth. Nit., Ammon. Carb., Spts. Ammon., Arom., may be administered; but if possible they should be avoided. Cathartics are to be specially avoided. Should constipation be present, enemas give relief. When complicated with Bronchitis, Am. Carb, Camphor, Syrup Squills, and Gum Ammoniacum, are most useful agents, coupled with the application of some liniment along the course of the trachea and sides. When the liver participates in the disease, characterized by yellowness of the visible mucous membranes, torpidity of the bowels, etc., mild laxatives generally give relief in this complication.

The sequelæ of Influenza are mostly Rheumatism, "Roaring," and occasionally Glanders and Farcy.

The paper was listened to with considerable interest, and produced a most lively discussion, in which all the members present took part. The especial feature of the discussion was the question of the contagious nature of the disease. That it is highly contagious in its nature was the unanimous opinion of those present. The treatment recommended by the essayist in his paper was also discussed at length, and approved; and particular stress was laid by all who took part in criticising the paper, on the absolute necessity of the nursing and general comfort of the patient, together with the free use of stimulants of an alcoholic nature—as stout, ale, etc.—during the course of the malady.

Mr. MALCOLM proposed, and Mr. PALLIN seconded, a cordial vote of thanks to Mr. Freeman for his paper, which evidenced considerable thought and study, as well as experience of the subject. Mr. Freeman suitably replied.

It was arranged that the next regular meeting of the Society should be held in January next, when the incoming President's address will be read and other business transacted.

The usual vote of thanks to the Chairman was passed by acclamation, and the members afterwards dined, and passed a very pleasant evening together.

J. J. SPERRING, F.R.C.V.S., *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE forty-seventh meeting of the above Association was held at the Hop Market Hotel, Worcester, on Friday, October 27th, the President, Captain Russell, in the chair.

Present :—Professor Walley, Honorary Associate of the Society, and the following members :—Messrs. F. Blakenay, A. Over, E. Stanley, O. Hills, A. B. Proctor, H. D. Pritchard, T. Chambers, H. Blunt, A. Bowles, H. R. Perrins, H. M. Stanley, G. Carless, W. Dale, F. W. Barling, E. Beddard, J. C. Barling, H. Goulè, H. Olver, H. Collett, and R. C. Trigger.

Visitors present :—Messrs. A. C. Robertson, F. H. Pinkett, J. Soulsby.

The SECRETARY stated that letters of apology and telegrams had been received from Messrs. Geo. Fleming, H. Goodall, A. Green, H. J. Cartwright, Faulkner, Bland, Cox, Tipper, T. Greaves, and Professor Williams.

Mr. Robertson, of Worcester, and Mr. Pinkett, of Worcester, having been duly nominated, were unanimously elected members of the Association.

The SECRETARY then read a letter from Mr. Geo. Carless, thanking the Society for the letter of condolence which they had caused to be addressed to the widow and family of the late Mr. Carless, of Stafford. It was resolved that a copy of the letter of condolence be engrossed on vellum, and presented to Mrs. Carless, senr.

Mr. PERRINS stated the business done at the meeting of Council the previous day, which was attended by Mr. Blakenay, Mr. Greaves, and himself.

Mr. E. STANLEY announced that subscriptions to the Fleming Testimonial Fund were coming in satisfactorily, about thirty pounds having been already subscribed by members of the Association. He pointed out the necessity for promptitude on the part of those gentlemen who had not already subscribed, as the lists would close at an early date.

Some correspondence with the Secretary of the Veterinary Benevolent and Defence Association having been read, on the matter of the appointment of a Life Governor in place of the late Mr. Carless ; in the absence of Mr. Greaves, treasurer of the Benevolent and Defence Association, it was resolved that the discussion of the matter be adjourned to next meeting, when it was hoped that gentleman, and probably the Secretary also, might be able to attend.

Mr. A. OVER, of Rugby, then read an excellent paper on the Soundness of Horses, dividing his subject into three headings : Legal Soundness, Practical Soundness, and Serviceable Soundness.

An animated discussion naturally ensued, in which the President, Captain Russell, Professor Walley, Mr. E. Stanley, Mr. Proctor, and others took part.

At 4.30 it was resolved to adjourn the debate on Mr. Over's paper until the next meeting of the Society.

Professor WALLEY then kindly exhibited and explained the use of several of his latest improvements in veterinary instruments, amongst them being an ecraseur, into the scabbard of which an embryotomy knife could be placed and used.

Also an aspirator, which could be used as a syringe, irrigator, puncturator, etc. Also a very ingenious instrument which could be used as a dilator, speculum, or retractor with concealed bistoury.

Great interest was manifested, and a hearty vote of thanks accorded to the Professor for the part he had taken in the proceedings of the day.

Birmingham was decided upon as the next place of meeting.

A large party then adjourned to dinner, and, under the presidency of Captain Russell, a very enjoyable evening was spent.

ROBERT C. TRIGGER, *Hon. Secretary.*

CENTRAL VETERINARY MEDICAL SOCIETY.

A MEETING of the above Society was held on the 2nd November, Mr. G. Fleming, Vice-President, occupying the chair. The annual dinner was fixed for the same evening, and the business of the meeting was therefore confined to the reception of the President's address, which was read by the Secretary.

The PRESIDENT thanked the Society for the honour conferred upon him by his unanimous re-election, and expressed his determination to fulfil the duties of the office to the benefit and interest of the Society, and, as far as was in his power, to make the coming session as successful as any of the preceding ones.

It was, he reminded the Fellows, the twelfth session, and he congratulated them on the satisfactory state of their Society, both financially and in regard to the good attendance at their numerous meetings.

The papers and subjects brought before them had been most interesting and instructive, and he asked those present to assist again by bringing essays, pathological specimens, or records of cases of interest, expatiating on the advantages to be thus derived by the evolution of new ideas, and on the benefit reaped by the essay writer, both from working up his subject and from the discussion called forth.

He said that the only cause he had for regret, with regard to the meetings of the past session, was the absence of many of the oldest Fellows of the Society, several of whom never attended, and others but seldom, rendering it evident that they took little or no interest in the Society's welfare; and he remarked that he could not let the opportunity pass without expressing his sincere regret that our Teaching School was so seldom represented at the meetings. This was not the case with the Scottish societies, in whose meetings the veterinary professors in the vicinity took great interest. Our Veterinary College was represented in the Central Society by one Fellow and one Honorary Fellow only, and it was, he said, seldom that either of them were seen at the meetings.

He then considered the question of election to the Council of the Royal College of Veterinary Surgeons, and thought the Society had too long been kept from exerting its influence to secure the election of any member to that body; but that it was now a question for consideration whether this influence should not be exercised to elect representative members—Fellows who take part in the work of the Society.

Of the several Councilmen who were Fellows of the Central Veterinary Medical Society, only one (the present President of the R.C.V.S) could be called a worker at its meetings.

After reviewing the progress made by the Committee appointed to consider the founding of the National Veterinary Association, he alluded to the provisions of the Veterinary Surgeons Act, more especially in reference to the clause giving the power to remove from the register the name of any member who was guilty of gross misconduct; this was, he thought, most necessary. Referring to the very able introductory address delivered by Professor Axe at the Royal Veterinary College, he was pleased to hear that increased facilities were afforded the students for acquiring practical knowledge; he thought this knowledge should be demanded by the examiners before a diploma was given. He did not expect that a young man just passed should be as skilful a practitioner as those of several years' standing, but, on

the other hand, it must lower the status of the profession in the eyes of the public to turn out men unable to diagnose the simplest forms of disease. He concluded with wishes for the prosperity of the Society, and a hope that the festivities of the evening would pass off pleasantly and harmoniously.

Mr. FLEMING said he endorsed Mr. Woodger's remarks in reference to the absence of many of the older Fellows and the Professors from the school. He said the reason was well known why the President felt unable to be present and take part in the convivialities of the evening, and he proposed that a letter should be sent to the family of the late Mr. Joseph Woodger, expressing the sincere sympathy of the Fellows of the Society.

This was immediately agreed to.

Both the meeting and the dinner following it were held at the Café Royal, Regent Street. In addition to some visitors, the following Fellows dined together, passing a most enjoyable evening :—Messrs. Hall Brown, T. Burrell, Capt. Russell, Messrs. A. R. Charles, J. Broad, W. South, H. R. Shaw, A. Broad, Arthur Broad, W. Mole, F. W. Wragg, H. I. Hancock, T. S. Price, R. Ward, J. Rowe, G. Fleming, F. G. Samson, T. G. Batt, C. Sheather, and T. Moore.

THE LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual Quarterly Meeting of this association was held at the Blackfriars Hotel on Wednesday, September 27th.

The president, Mr. Alex. Lawson, in the chair, and the following members and friends present : viz., Messrs. Greaves, W. A. Taylor, Woods, Whittle, Locke, Roberts, Leach, Bunnell, A. Darwell, Darwell, Ingram, Wilson, I. B. Taylor, Holmes, Chadwick, Stone, Bottomley, Harrison, Cockshoot, Dacre, Elam, Hopkin, Briggs, Faulkner, Wilkinson, Marshall, Michaelis, Kirkman, Challinor, Davidson, and Wolstenholme.

The minutes of the previous meeting were read and confirmed, and the apologies for non-attendance were presented.

The question as to the desirability of celebrating the twenty-first year of the existence of our society by holding a soirée and ball next came up for final decision, and was negatived,

Mr. Frank Bottomley and Mr. Harrison were nominated for membership.

Mr. ELAM now read his promised paper on "Quacks and Quackery" as affecting our profession. He referred to the advertising in newspapers, to the practice of some who lease compounded medicines, which, in the words of one puffing handbill, "can be obtained at every blacksmith's shop in town or country ;" and drew attention to the pamphlet of a F.R.C.V.S., by means of which he seeks to monopolise the performance of a certain operation. From this Mr. ELAM passed on to review the custom of wholesale druggists who append to their prices current the formulæ of various veterinary medicines, and which in some cases are not restricted to the profession, but are circulated amongst horse owners indiscriminately. The paper was written in a most charitable key, and sought to show how (in the former instances) veterinary surgeons injured their own reputation, and also cast a reflection on our calling, which is a profession requiring a liberal education as well as special training, and not one of compounders of something warranted to cure this, that, and the other. In the discussion which followed many of the members joined, and all deprecated advertising and puffing as certain to injure the profession in the estimation of the public.

Mr. E. FAULKNER then read his paper on "Quidding and allied ailments in the Horse," as follows :—

My attention is frequently called to horses quidding their food; some are readily set right, whilst others prove intractable. To these latter I beg to invite your attention, and shall be very much pleased to receive your opinions and advice.

The simpler cases of Quidding arise from the edges of the molar teeth becoming sharp, cutting the tongue upon the inside, or the cheek on the outside, during the process of mastication; or it may proceed from great unevenness on the grinding surface of the molars, some tooth or teeth projecting considerably beyond the level of the other teeth, and such projection passing into a considerable hollow on the opposite row of molars, or, as in some cases, in front, in others behind the row of molars opposite. Other irregularities act as a cause, such as, for instance, defective dentition, and where there are considerable spaces between the teeth; these spaces get filled with food, which decomposes, causing inflammation of the gums, followed not unfrequently by decay of the fangs or crown of the teeth. Again, you may have the lower maxilla too narrow, attrition imperfectly performed, leaving one edge without wear and overgrown, the other sustaining all the wear, and completely worn down to the gums and alveoli.

Occasionally a case of inveterate Quidding is met with, irrespective of age, where we are unable to detect the slightest defect in the teeth or any approach to paralysis of the lips. You may feed on boiled food, chop or hay, or indeed any kind you choose, apply iodine preparations to the cheeks, lips, and throat, blister or seton, and administer nerve stimulants, without improvement.

There are other cases in which it would appear that there is a defective state of the organs of deglutition; a large proportion of the food, after mastication, is ejected through the nostrils; there is no particular tenderness perceptible about the throat or fauces, but in making the attempt to swallow, a fit of coughing takes place, and quantities of the masticated food are expelled through the nostrils.

This state I have known continue many weeks and months, in old and also in young horses, associated with, and subsequent to, a catarrhal attack, and also disassociated therewith.

It is not at all an unfrequent occurrence to see the water a horse drinks pass back through the nose in cases of sore-throat, when the pharynx is in a state of inflammation, or Quidding where you have pus in the guttural pouches; but cases where large quantities of masticated food are ejected through the nostrils are of less frequent occurrence.

During the last two or three years we have had several of these cases, and have an inveterate one at the present time. You may feed as you like, use the galvanic battery, gargle, blister or seton the throat, apply iodine, administer nerve stimulants, and yet no improvement.

I ask, What is your diagnosis, prognosis, and what treatment would you recommend? I regret very much not to have had an opportunity to give you the post-mortem appearance.

On the termination of the discussion which followed, Mr. BRIGGS proposed, "That a vote of thanks be given to Messrs. Elam and Faulkner for their interesting papers;" this was seconded by Mr. ROBERTS, and carried unanimously.

JOHN B. WOLSTENHOLME, *Hon. Sec.*

EDINBURGH NEW VETERINARY COLLEGE.

THE winter session of the New Veterinary College at Gayfield was opened on Wednesday, 25th October. Principal Williams occupied the chair, and there was a large attendance of students and visitors. Amongst others, the

following veterinary surgeons were present :—Professor Macqueen, Glasgow Veterinary College ; Messrs. T. Greaves, Manchester ; Connochie, Senior and Junior, Selkirk ; Borthwick, Kirkliston ; Cunningham, Slateford ; Aitken, Dalkeith ; Aitken, Edinburgh ; Rutherford, Edinburgh ; Black, Howgate ; Cameron, Berwick ; Freeman, Dublin ; Adamson, Bolton ; Phillips, Piershill ; Reid, Leith ; Philps, St. Andrews ; Brock, Glasgow ; Spruell, Dundee ; Storie, E. Linton, etc. ; and Alderman and Mrs. Schofield, Bradford ; Councillor and Mrs. Ryan, Manchester ; Dr. Murray, Leith ; Mr. Falconer King, C.A., Minto House ; Hunter, Macalpine, Minto House, etc. ; Professors Hunter, Macalpine, and Macadam, New Veterinary College. The inaugural address was delivered by Professor Lewis, who at the outset of his remarks gave a brief retrospect of the college, which since its foundation in 1873 had been attended with most gratifying success, the number of students having increased from 61 in the opening year to 146 at the end of the last session. That increase in the classes had rendered the accommodation of the present building totally inadequate for their requirements, and in consequence the Principal had been compelled to take steps to provide larger and more suitable premises. Of the 146 students, 130 presented themselves for examination before the Examining Board of the Royal College of Veterinary Surgeons, and 93 succeeded in passing. At the "junior" examinations 46 students were presented, and 34 passed, 5 with "great credit ;" and at the "second" examinations 57 students were presented, and 35 passed, 13 with "great credit." Out of 36 students who presented themselves for the final examination, 26 received their diplomas, and were admitted M.R.C.V.S., 8 having obtained the standard of "great credit." Turning to the affairs of the profession generally, the Professor dealt with the vast improvements made in the methods of conducting microscopical research. The profession had been rather tardy in recognising the worth of the microscope as an auxiliary in the study of pathology, but the recent discoveries by means of the microscope in the pathology of Splenic Fever, Tuberculosis, Fowl Cholera, Louping-ill, and similar diseases, had materially assisted in demonstrating its value. As illustrating its practical worth, he referred to the discoveries in connection with Tuberculosis and Louping-ill. They had learned that the former disease, which occasioned one-seventh of the deaths of the human race, was caused by certain rod-shaped bacteria. Tuberculosis was not confined to mankind, but was very prevalent among the lower animals, particularly our beef and milk producers, and it had been recently calculated that in London annually 7,500 cattle affected with this disease were slaughtered for food. The danger attending tuberculosed flesh and milk was no imaginary one, for it had been proved over and over again by experiment that the disease can be readily communicated to the lower animals ; and if to cattle, sheep, and pigs, why not to man ? In Louping-ill, which annually destroyed great numbers of our sheep, we had another disease due to the action of micro-organisms. Professor Williams had discovered that a jelly-like substance found in the spinal canals of sheep affected with the disease, contained quantities of a bacterial mycelium, which gave a clue to the cause of the disease. Even in those sheep whose spinal canals did not contain the jelly-like substance, the bacteria could readily be detected by cultivating a little of the fluid in mutton broth, when similar results were obtained. In order to solve the connection between Ticks and Louping-ill, numbers of ticks were collected from louping ill sheep, and subjected to microscopical examination and to cultivation. It was then discovered that they also were infected by bacteria resembling those obtained from the sheep. One link was still wanting—the production of the disease experimentally by inoculating sheep with the bacterium-infected tick, but any advance in that direction was forbidden by the Anti-Vivisection Act. In conclusion, Professor Lewis expressed the

opinion that the time had now arrived when the examinations for the profession should be conducted by veterinary surgeons without the aid of medical men; and he also thought their curriculum a little too faulty, and suggested alterations which he believed would tend to its improvement.

Principal WILLIAMS then addressed a few words to the students. Having referred to the success which had attended the present college, he proceeded to give a general description of the premises to be built in Leith Walk, and said they would include a lecture room capable of holding 250 persons, another to accommodate 150 persons, a museum and dissecting room, a chemical laboratory, a physiological and pathological laboratory, bone rooms, etc. There would be about 20 loose boxes, accommodation for cows, a dog infirmary, covered exercise yard, etc. After alluding to the cause of Louping-ill, the Principal went on to speak of the recent poisoning of the Fifeshire hounds. Some of the carcases had been sent to him, and he examined their blood with the microscope, and found it teeming with an organism. He cultivated this repeatedly, and found it to be exactly alike in all of them. There was no putrefaction, and his conclusion was, that the hounds must have been poisoned by eating some animal which had died of this special organism.

Mr. CONNOCHIE, Selkirk, proposed a vote of thanks to Professor Lewis for his address, and pointed to his successful career as an example to all students.

Mr. GREAVES moved a vote of thanks to the Chairman, and advocated the election of none but veterinary surgeons to the examining board.

The proceedings then terminated.

GLASGOW VETERINARY COLLEGE.

THE Introductory Lecture to the Winter Session of the Glasgow Veterinary College was delivered on 24th October, by Dr. Cleland, Professor of Anatomy, University of Glasgow. Principal M'Call occupied the chair; and, in addition to a large number of students, the following gentlemen, among others, were present:—Rev. Mr. Blair, Cambuslang; Rev. Mr. Watson, Glasgow; Dr. Roberts, Wales; George Stodart, Esq., of Broom; Andrew Hoggan, Jun., Esq., of Camphill; Mr. Johnson, Letterick; Captain M'Call, Mr. Walker, and Mr. M'Intosh, Glasgow; Professors Knox, Cooke, and Macqueen, Glasgow Veterinary College.

The following veterinary surgeons were also present:—Professor Walley, and Mr. Rutherford, Edinburgh; Mr. Thomas Campbell, Kirkcudbright; Mr. Pottie and Mr. Houston, Paisley; Mr. James Martin, Nantwich; Mr. D. Constable, Inchture; Mr. J. M'Call and Mr. W. Wright, Ayr; Mr. John Freeland, Blairgowrie; Mr. R. M'Farlane, Greenock; Mr. Gairdner, Helensburgh; Mr. Jarvie, Wishaw; Mr. Peddie, Cathcart; Mr. Douglas, Dunoon; Mr. Weir, Airdrie; Mr. Bond, Holytown; Mr. Carnduff, Howwood; Mr. Kerr, Dalry; Mr. Fred Foster, Cardiff; Mr. John Freeman, Kingstown, Dublin; Messrs. Boyle, Mitchell, Wyper, Hill, Weir, Blue, M'Queen, Renfrew, and Dickie, Glasgow.

Professor Cleland, who was introduced by the Chairman, said:—

Gentlemen,—It is a matter for gratulation that this great city is possessed of a Veterinary School so well equipped, so successful, and so rapidly rising in public estimation as this College is. I recall to mind its commencement and the difficulties with which the enterprise was surrounded, and wonder often at the indomitable perseverance with which Principal M'Call, having formed his resolution unaided and in spite of all discouragements, persisted steadily in his purpose till there grew in his hands, as we see to-day, this college with its numerous students, its excellent arrangements, and its increasing

reputation. Every one who desires to see Glasgow occupy the position as a centre of medical research, which the extent of her population and the antiquity of her University alike render it proper that she should, must be glad that her Veterinary College prospers. For the art of Medicine is one, whether applied to man or to the lower animals. The laws of life are the same in both, the methods by which those laws are to be investigated are the same for the veterinarian as for the physician, and the co-operation of the one with the other in research is of the greatest importance. It is a common and a most justifiable thing to speak of medicine as a noble profession. As a general rule, men call it so, because its mission is to save life, which is a fine thing to do. Undoubtedly, the importance which attaches to human life invests with importance the profession which seeks to guard and prolong it. The veterinarian occupies himself with the same laws of life, and though his department does not include the care of life as exhibited in man, there are often human interests committed to him of very great importance. Not only is valuable property entrusted to his charge, the success of arrangements and expeditions of the gravest possible kind may be largely dependent on his skill. But I venture to think that the thing which most ennobles medicine is not the end which it has in view, but the means by which it is sought that the end should be accomplished. It is not the final cause of its existence, but the efficient cause of its success on which medical art must depend for its dignity. There are modes of practising medicine which are not noble, and there have been times when such modes have been dominant. There is nothing noble or praiseworthy in prescribing physic or performing manipulations thoughtlessly on the strength of traditional rule, for the mere reason that so you have been taught, or that so others have been in the habit of doing before you. But, with open and earnest eye to wait upon Nature, and learn from her what her doings are, how her operations are conducted, what those processes are, the sum of which we refer to under the name of life, and how they are modified by each change of circumstance:—to do this is to subject your whole habits of thought to such a discipline as cannot fail to have an ennobling effect; and the profession whose objects are sought by such means is rendered noble indeed. Here, then, is the common bond of all medical study, the link by which the veterinary branch is made one with that more advanced art which deals directly with the health of man. We want to see the veterinary art more and more thoroughly scientific. It is with that view, for example, that the Royal College of Veterinary Surgeons has instituted its fellowship degree; and the sciences selected as subjects of examination for that degree are among those which not only are required in the ordinary course of your studies, but form the basis of all medicine scientifically prosecuted.

You are called on to acquire some acquaintance with the constitution of dead matter as exhibited by chemistry, of the laws and forms of life in its simple aspects as shown in plants, the structure of animals, and the mechanism and operations of all the organs of the body in health and disease—and this is the basis of all true medicine. It is the pursuit of those studies with intelligence and thoroughness which can alone give dignity to our art in any of its departments; because there is no other means of making it efficient for the objects it has in view, and because the honest pursuit of knowledge for its own sake has a salutary effect on the human mind which is not to be obtained by any other means whatever. Of a truth, the universe is God's, and none can touch His robe in faith without virtue going out from it. In the beginning of your studies, to you as to all students, the curriculum before you must seem rather a hard one; but let me conjure you, especially those of you who are just beginning, not to be contented with the very limited amount of information required for the passing of examinations.

You will find it to be a good thing early to select one of the sciences brought under your notice, and resolve to master it as thoroughly as possible, and continue to cultivate it as an amusement and a pleasure throughout life. By that means you will not only gain great increase of happiness to yourselves, but you will have the proud satisfaction of working in the most effectual manner possible to improve the status of the veterinarian throughout the country. I do not say that you will gain in popularity; the road to that seems no better than the goal. Doubtless, popularity is a pleasant adornment to the prospect of the future, and refreshing as a cup of coffee coming after dessert (spell it either way); but it is a poor thing to depend on for solid support, and he is an unhappy mortal who allows the consideration of popularity to interfere one bit with his prosecution of the path which he knows he ought to follow.

The study of experimental physiology is at present in this country eminently unpopular. We cannot expect that it should have much sympathy from the general public. The general public cares nothing for any truth or science for its own sake, but only for the so-called practical benefits to be derived therefrom; while science refuses to smile on those who love her merely for her fortune. She will not reveal the treasures of her wealth except in response to the following of her for her own sake. One would think that this principle had been long sufficiently patent to be generally understood; and yet the Act passed for the restriction of experiment on animals goes right in the teeth of it. On the injustice and folly of that Act I shall, with your permission, make a few remarks. I speak before an audience devoted to the care of animals, and the more experienced members of which know perfectly well that without experiment the information which you are able to turn to account for the prevention and cure of suffering in animals would not exist. I make that statement in broad terms; for though I am aware that certain licentiates in the healing art have striven to show that experiments on living animals are useless, I own that it surpasses my feeble powers to imagine how, without systematic and continued series of unfettered experiments we could have had any real knowledge of the functions of the nervous system, the action of the blood vessels, the use of the liver, the spleen, the pancreas, or the kidneys, or the place of sugar in the economy; how, in short, we could have had any of that body of useful information which constitutes modern physiology. No doubt phenomena exhibited by experiment may mislead by being misinterpreted; for in all progress there is required not only the presence of facts, but yet more, mind to translate them. But the only cure for such misinterpretations is further study by every means within our reach, indulging in contempt of none. Well, is it common sense that precisely those who are devoting themselves to the studies from which alone we can rationally hope to mitigate suffering in either the domestic animals or in man, should have a restriction and a bondage put on them such as are not applied to any other human being in her Majesty's dominions?

Whatever may be the pain to the victims of physiological experiment (and that you are aware has been grossly exaggerated) those experiments are never performed but with the view of obtaining and spreading a more accurate and complete knowledge of the processes of life. But those who have legislated against experiment—the members of the two Houses of Parliament—are, the great majority of them, sporting men. I have no feeling against sport, in at least some of its forms. But it has been often pointed out, and it was perfectly well known to our legislators, that every sportsman who wounds without killing the animal whose destruction is his delight, performs an unsuccessful experiment, which may and often does inflict the greatest amount of suffering that the animal is capable of feeling. The

special gratification of the gentle angler is to play with the sufferings of his fish, precisely as a cat plays with the mouse which gets into its clutches. And if these, the more innocent forms of amusement of our legislators, not only involve that very kind of cruelty which their legislation professes to wish to put down, but require for their enjoyment an utter carelessness for the fate and feelings of their victims, what shall we say of the fox-hunt and the coursing of hares? The sport in these cases consists not in the mere bodily pain inflicted, but in employing the whole force of the animal's intelligence for its torture, by prolonging the terror which precedes its slaughter. I am not here with the object of lecturing against sport—probably my audience includes many who enjoy it keenly in one form or other—but I want to know how, in the face of these facts, the legislators who passed the Act for the curbing of physiological experiment, can reasonably object to the charge of hypocrisy.

Some months ago, a writer in the *Cornhill Magazine* not altogether averse to experiment, bewailed that scientific men, defending what was defensible, should be so carried away by their feelings as to make that charge. But it is worth while, before coming to a conclusion on that subject, to take into consideration what hypocrisy really is, and the varieties which it presents. Before any man blazes up in holy indignation against hypocrisy being mentioned as an element entering into any of his doings and habits, let him ask himself if there is a single human being entirely free from it? Perhaps we shall not be wrong in surmising that precisely those who have the least hypocrisy about them will be the first to acknowledge the impossibility for any human being to be in all his words and actions entirely free from every taint of such a thing. Truly, it is alike bad form and grossly inexpedient to make point blank such a charge against any individual in argument, even as a climax to what may seem to the disputants a triumphant demonstration of such inconsistency as, once laid bare, stands out so gross that it cannot be easily supposed that any one could be otherwise than wilfully blind to it. Yet that is quite a different matter from admitting that people because well bred and in many ways commendable, are free from hypocrisy. King David acknowledged that he was in his haste when he said, "All men are liars;" but it is worthy of remark that so far from retracting the observation in what the hero of Dean Ramsay's anecdote called his "solemn leisure," he only thanked heaven devoutly for being delivered from their machinations. The royal poet's words were certainly more forcible than polite; and would probably have shocked the religious world of the nineteenth century, could it have been present when they were uttered; but they are a concise and graphic avowal that he had met with deception on every hand, till he felt that he had no man to trust to. Doubtless, no healthy-minded person would foster the cynical vein that finds expression in such an ebullition, except under the smart of unmerited suffering; but while it is a truly horrible state of mind to believe that we are surrounded with people given over without exception to deliberate falsehood, a fairly critical eye cannot fail to detect, not only that every day do statements come under notice deviating from strict accuracy to an extent that might easily have been reduced by consideration on the part of the speakers, but also that the critic himself is subject to the same frailty of human nature which afflicts his neighbours. The frailty is simply this, that time goes hurrying on, carrying with it the exigencies of conversation and the impulses to act on but half-considered judgments and prejudices, faster than any mind, however able and willing, can manage to supply corrected thoughts and words. Such states of matters become habitual, and our sensibilities become more blunted the more that thought is overbalanced by impulsiveness of word and deed.

Decidedly, such considerations make it all the more objectionable to call

your neighbours bad names and accuse them of hypocrisy (or for that part brutality) ; but they also make it plain that while men of honest intent may easily be guilty of great inconsistency, they become, if the inconsistency be grave, and at the expense of others, and is clearly pointed out by the sufferers, justly liable to be thought hypocritical if they persevere in their injurious course : even although it be not expedient for those sufferers to press the charge.

Hypocrisy, like untruthfulness in other forms, is a thing varying in degree ; and it varies in the amount of self-consciousness accompanying it. But its banefulness is not necessarily proportionate with its self-consciousness. On the contrary, it may be maintained with some show of reason that the greatest masters of the art make a point of as soon as possible deceiving themselves first, and thus bring the earnestness of a pseudo-truthfulness into their persuasion of others. But if such depths of subtilty there be—and surely no one can doubt it who has systematically sought to make acquaintance more salutary than pleasant with the springs of action within him—it yet becomes us to be slow to charge any individual man with carrying such an abyss in his heart, especially on the ground of the part he takes in echoing some cry of sensless clamour. Nevertheless, a nation, a community, or a faction may be justly charged in the gross with hypocrisy, although the individuals who compose it may be far from fostering that vice or having it polluting their motives more than it does that of other honest men. For individuals lean one on another, each inclined to believe what others vouch for, when he has a good opinion of those who vouch, or is prejudiced in favour of the statement alleged ; and with similar laziness we are all too liable to suppose that others have worked carefully out the conclusions which we accept at their hands, instead of dispassionately working them out for ourselves. Supposing that in this way we have accepted a gross and obvious inconsistency to the injury of some section of our fellows, the fault is venial while our ignorance continues ; but as soon as it becomes present to our minds, we shall be demoralised if we have not the courage to shake ourselves free from the injustice to which in our inadvertence we have been lending aid. This being the case, it is the most natural thing in the world that those who suffer from an inconsistent clamour, or sympathise with others who do, should, when they have for a length of time made, to their own thinking, the vileness of the clamour abundantly evident, throw prudence overboard, and in the bitterness of their souls denounce as hypocritical the continued support of injurious and inconsistent allegations. It may not be prudent, it may be far from just—so curious are the inconsistencies which may live together within one honest mind—but it is natural, and it may even be noble.

The applicability of these remarks to the position of physiologists suffering from charges brought against them by the public is obvious. Two Houses of Parliament, consisting in great part of men who delight to scatter pellets at random through the bodies of partridges and hares, and get into enthusiastic animal spirits as they chase the fox with ferocious hounds, instead of putting him as quietly as possible out of pain—those two Houses of Parliament do most honestly allow themselves to be worked up by agitators to a pitch of indignation at the sufferings inflicted on animals in other ways with which they are unfamiliar, and which, therefore, appeal differently to their emotions. For the crack of the rifle is exhilarating to hear ; the sharp edge of the surgeon's knife is dreadful even to think about. But while it is easy to believe that they imagine they have done honourably, it is impossible to clear them from inconsistency. It remains the fact that a large number of those who passed the Act which restrains and insults physiologists, do yearly inflict on animals more suffering than is inflicted by all the physiologists

in the world. But, O most honourable men! *Vos Bruti!* who by sense of public duty are unwillingly impelled to stab your benefactors; when these things are pointed out, you cannot plead ignorance of your own inconsistency.

It is a pleasure, however, to have good reason to know that the highly-wrought pictures which are often drawn of the sufferings of animals from experiment and otherwise are full of exaggerations depending on the ignorance or want of consideration of those who have drawn them. So far as those exaggerations depend on erroneous representation of what goes on in physiological laboratories, they have been so often and so fully exposed that those who are still misled by them can scarcely be held as other than willing dupes indulging a morbid relish for scandal. I shall only say that a large number of so-called vivisections are, so far as the sensations of the animals are concerned, the mere infliction of death in the most painless manner possible; and to this number belong a class of important experiments which I call to mind in connection with some remarks made by Cuvier which have been quoted against experiment. Cuvier stated (and doubtless regretted) that it was impossible to isolate the sets of wheels in an animal body and see each working by itself, because the different sets are so interdependent. One can easily understand his meaning and even admit a certain semblance of justification for that statement in his day; but how interested would the great zoologist have been to see, as can be managed now, numbers of single organs, a muscle, a kidney, or a liver, fed and kept alive after total separation from the body! For such an experiment the animal is sacrificed at once, only the blood and the organ to be studied being kept. But though any one for purposes other than scientific is at liberty to kill a dog, and a butcher might do so in the exercise of his calling, provided any one could be got to eat the carcase, the physiologist must not kill it without first obtaining a licence from a state official.

But the exaggerations of which we complain depend also in part on a mistaken estimate of the powers of animals to feel pain; and perhaps this is not so easily understood as may at first sight appear. I do not refer to the numerous convulsive and other reflex actions which might be mistaken by the uninitiated for symptoms of pain, but happen when consciousness is utterly destroyed—such phenomena as, occurring in human beings, lead the relations to ask if they are tokens of suffering, when the physician is able to reply that the patient is completely unconscious of everything. What I wish to show is that the capability of feeling pain is, in even the higher domestic animals, far less than in man.

If we look at the matter critically we shall find that the evidence is distinctly to that effect. In the first place, the skin of the domestic animals is very different from that of man. It is well known that in operations on the human subject the skin is the structure whose injury gives most pain, and hence the surgeon's rule, which was always carefully attended to before the introduction of anæsthetics, to complete the skin cuts rapidly and at once; and that other rule, to make the ends of the wound abrupt, not sloping away in tails, which unnecessarily expose the sensitive substance of the integument. The mere division of the deep structures with a sharp instrument would appear to cause little or no pain, except in the case of nerves. When there is much pulling or violent tearing there may be great pain; but that muscles, vessels, and connective tissue, may be handled and divided without causing any suffering comparable with what is occasioned by division of the skin, is a recognised fact.

When, however, you come to consider the integument of the domestic animals it is not difficult to make sure that you have a much less sensitive structure to deal with. Its microscopic as well as its obvious appearance

would warrant you in expecting that it would be so; and while neither a horse, nor a dog, nor a rabbit is at all slow to make you distinctly understand when it is hurt, it becomes evident from the absence of signs of pain when skin wounds have to be made on them, that they suffer from them very little indeed. When, in various experiments which have greatly advanced physiological knowledge, the pneumogastric nerve of a rabbit is cut down on, supposing the animal not to have been chloroformed, it will be seen to suffer little inconvenience from the skin wound, and none from the search among the structures underneath; in fact, obviously much less annoyance than it would suffer from the administration of chloroform, which, strange as it may seem to some ladies, it abominates. But when the nerve is divided a sharp cry of agony at once tells, not only the moment of agony, but how far the animal had previously been from anything of the sort. Happily it ceases on the instant, and the rabbit shows no further discomposure.

So then, the rabbit is capable of feeling acute pain, but it is quite certain that skin wounds give it very little trouble. As to the pain which it does feel, though no physiologist would give any animal a moment's pain unnecessarily, it is well to note some circumstances which probably make it less than it seems. Even in man we see the greatest differences in different individuals as regards capacity for feeling pain. There can be no doubt that the actual sensation differs in different persons. That which will give acutest suffering to one man will to some others give little annoyance. Of course we must guard against estimating the pain by the outcry made, and we have, in great measure, to rely on the testimony of the persons, as we have no accurate means of measuring their sensations; but, speaking of the pain itself, apart from the power of bearing it, which ought also to be increased by proper education, I do not suppose that there can be any serious doubt that the pain occasioned by a given amount of lesion varies according to the fineness of the impressibility of the nervous system, and that civilisation and education, as well as certain alterations of nutrition in disease, do greatly enlarge the capacity for feeling pain.

If this be so, and there are surely few who doubt it, it seems evident that, as we descend the scale of being, even among mammals, the sensation of pain must become modified. At the same time, we must take care not to confuse position in the scale of intelligence with impressibility of the nervous system. One does not require to illustrate from man to find great variety of nervous refinement within the limits of a single species; you have it as well illustrated in horses and in dogs. I do not doubt that a high-bred horse or a high-bred dog has a greater capacity for pain than the horse or dog of low degree. All I say is, that the total sum of possible consciousness in an animal is a factor which cannot be left out in estimating the maximum intensity of sensation possible to it, and when we come down to animals of so feeble intelligence as rabbits, it is a factor which must be of considerable importance.

But the amount of intelligence has a far more important bearing than this on the character of the pain possible to an animal. The actual pain produced at the moment by a physical lesion constitutes but a small portion of the idea of pain as it presents itself to our minds. The accessories of anticipation, memory, and associations play an important part; and it is the effect of the images presented by these to the mind which gives rise to all the suffering which we term horror. Doubtless the more intelligent mammals have both memory and association of ideas largely developed. But as to anticipation, they have no chance of such a thing in a properly regulated laboratory; and my contention is that in the brutes, anticipation, memory, and association have a so much less amount of mind than in man for their origin and

operation, that the images which they produce must be both much fewer and much less wrought up into horrible phantoms ; in fact, that we cannot well estimate how much of the complex machinery of pain, as we know it, the lower animals are altogether free from. At the same time, it is so perfectly evident that large capacity for pain is left to such animals as the horse and the dog that it may be safely affirmed that no one, at least no physiologist, would choose those animals for an experiment which could equally well be performed on a less highly organised animal. Perhaps, indeed, it would be pretty accurate to assume that the sympathy of physiologists for the lower animals stands in about the same ratio to that of sporting legislators, as the intelligence of a dog does to that of a rabbit. However, no one can doubt that the mental constitution of a rabbit is so limited, that it is quite incapable of the suffering of which a horse or a dog is capable.

I have confined my remarks hitherto to mammals, and am well aware that to many they may seem to be so speculative as to have little cogency, though I think they ought to have a not inconsiderable effect in moderating, to those who are animated by sincere affection for animals, the imaginative vision which has been so carefully fostered in them by professional agitators. But, if we turn to the cold-blooded animals, the line of argument which I have pursued becomes enormously more important. It is a totally untenable position to suppose that a frog can possibly be capable of feeling anything nearly resembling what we know as pain. The consciousness of a frog is something so far removed from that of a human being, that it is impossible to imagine any condition for our minds to liken it to. That may be taken as certain from the imperfect development of its brain, as compared with the brains of higher animals. That difference of brain structure intimates an entirely different psychical constitution, in which pain, like every other impression, must differ enormously from all which we experience in ourselves.

The organisation of fishes is even lower ; and we may allow our friends to fish in peace, with quiet consciences ; that is to say, if they have not been persecuting their fellow-men. But the Act of 1876 extends to all vertebrata, and, therefore, no man who helped to pass it has any moral right to catch salmon with the rod, especially without a bottle of chloroform attached to his hook.

I am not an experimenter on animals, and have no personal interest to serve in the remarks which I have made, but it is certainly the duty of those who are thus free, and who, from the nature of their pursuits, are most familiar with the magnitude of the debt which humanity owes to experiment —it is their duty to aid in opposing, so far as they can, the spirit of persecution against experimenters.

It is so pleasant to pose before the public as possessors of great goodness of heart, that it is no wonder that many who were engaged in the agitation which led to the Act of 1876 should be stimulated to carry the game further, as they still try to do. But it almost surpasses belief that a Lord Chief Justice of England should deliberately shut his eyes against all consideration of justice, and that the mitred leaders of the flock in the ways of righteousness should be his associates in a proposition so mad that it may well arouse alarm. Plainly, even the Act of 1876 ought not to be quietly acquiesced in by the nation as if it were right. Martin's Act is amply sufficient for the repression of senseless experiments on warm-blooded animals by tyros ; and if there be among those devoted to science aught of a want of care and right feeling in any instance, which as an exception to the general rule there may be, legislation is not the appropriate means to prevent it. It is in the crude stages of scientific life that useless cruelties are likely to occur ; and by favouring the free advance of science the nation will most effectually prevent their occurrence. It is by more complete scientific education within the pro-

fession that we ought to try to get rid of such experiments as those which Mr. Lawson Tait of Birmingham acknowledges having performed fifteen years ago, accompanying the acknowledgment with remarks which certainly show how useless and improper in his hands those vivisections were. I do not know, however, what some of his fellow-agitators will think of the following remarks by the same writer :—"The doctrine of evolution has affected religion as it has everything else, if indeed it is not establishing an altogether new form of faith, which is making an unrecognised, certainly an unmeasured, progress amongst us. Admitting that the so-called lower animals are part of ourselves, in being of one scheme and differing from us only in degree, no matter how they be considered, is to admit they have equal rights." Equal rights ! One would like to know if it is proposed that the doors of stables, kennels, and hencoops are to be opened in vindication of their liberty. Are vegetarianism and cannibalism the alternatives set before us? And does this estimable surgeon consider it no more serious a matter to take the life of a patient than to kill a sheep? He must be joking irreverently at his friends, and alluding to the "so-called lower animals" being "part" of lords and ladies after they have been eaten by them ; for in another place he regrets that Quaker's blood was not injected into the veins of Archbishop Laud to make that prelate peaceful.

The Act of 1876 is simply an ungrateful singling out for police supervision of the one particular class of men to whom the age owes everything in the way of improved health and alleviation of the diseases of man and brute which distinguishes it from bygone times ; and, passed by the men by whom it has been passed, however excellent their motives, it is a public scandal. The notorious habits of our lawmakers, whether good or bad in themselves, brand on the pages of the Statute Book which contain it, a comment which, however little we may wish to apply it to individuals, flares out to our shame before all nations as no other than that hated word hypocrisy.

How shall this blot be removed? There are only two means. One is to put an end to all sport practised at the expense of any vertebrate animal, and thus show that the nation which sympathises with hundreds of animals suffering at the hands of physiologists, sympathises also with the tens of thousands of animals which suffer to a greater degree at the hands of sportsmen ; the other is to rescind the law which at present so hampers research. The more importance that is given to the limits of possible pain in brute vertebrates, and more particularly the less intelligent of them, the less is the need of an Act interfering with experiment ; while on the other hand, the less these limits are believed in, the graver does the case become against the sportsman. As to the right to inflict pain ; if there be none, there can be no right to inflict death. If there be a right, it depends on the amount of the pain and the importance of the object. The amount of pain, calculated either by intensity or numbers, which is inflicted by the sportsmen, is much greater than that inflicted by the physiologists. The object of the physiologists and physicians is increase of knowledge and alleviation of suffering, both among men and brutes ; the object of sportsmen is merely amusement, which they believe to be morally innocent ; and I, for one, am not disposed in most instances to contradict them.

In the economy of the world pain has its place. But if it were in all circumstances wrong to inflict it, it could not have existed under the domination of an all-merciful God. The comparative importance of ends must be constantly kept in view ; and surely they whose science, founded on experiment, has spread its beneficent influence over man and beast, and gained for them all the alleviation of suffering which has been gained, may be held to endorse, more effectually than the President of the Anti-Vivisection Society, the sentiment toward the close of his illustrious relative's immortal

poem, directed against the senseless slaughter of birds for mere amusement —a poem as yet apparently unfamiliar to the ears of the sentimental egotists who think it well that the poor of humanity should be the victims of unguided experiment, that doctors may learn skill before they are called in by them.

"Farewell, farewell! but this I tell
To thee, thou wedding guest!
He prayeth well, who loveth well,
Both *man*, and bird, and beast.
He prayeth best, who loveth best,
All things both great and small;
For the dear God who loveth *us*,
He made and loveth all."

At the close, Principal WALLEY, of the Edinburgh Veterinary College, awarded a vote of thanks to the lecturer for his able address.

ROYAL (DICK'S) VETERINARY COLLEGE.

ON Wednesday, 1st November, Professor M'Fadyean delivered the inaugural address to the students attending the Royal (Dick's) Veterinary College, in the theatre of the college, Clyde Street. There was a large attendance, and the chair was occupied by Bailie Anderson.

The CHAIRMAN remarked that he need scarcely say how heartily the magistrates and council congratulated the professors and students on the opening of another session, and on the continued prosperity of the college. The Town Council had always looked upon this trust which had been given to them as one of very considerable importance, both as regarded its own character and as regarded the city; and also, he might add, because of the respect which so many of them entertained towards the founder of the college, the late Professor Dick (applause). Many of them remembered his marked features and his marked character all through; and he was glad to learn that by-and-by, although the Professor had left a most worthy memorial in his reputation, and in this college which he had founded, they would have a memorial statue inaugurated to him inside the college which would bring his features within the knowledge of those who did not know him during life (applause). He thought that, looking to the comparatively short period the college had been under the control of the Town Council, they had reason to congratulate themselves upon the success which had attended the appointment of professors from time to time. He knew of no better evidence of the success in this department than that few of the professors were allowed to remain long among them. He congratulated Professor M'Fadyean on attaining last session the degree of Bachelor of Medicine and Master of Surgery. Another proof of the success of the college was that out of eighty candidates for inspector in the Council of the Irish Veterinary Staff, only two were chosen, and they were graduates of this college, and in the last army examination three were successful, of whom two were graduates of this college (applause).

Professor M'FADYEAN then delivered his inaugural address, which was as follows:—

We are met to-day to inaugurate the sixtieth session of the Edinburgh Veterinary College. On the 24th of November, 1823, the introductory lecture of the first session was delivered by Professor Dick in the Calton Convening Rooms, and the history of veterinary science in this country may be said to date from that occasion. It is true that previous to that time there existed throughout the country a set of men variously designated as "cow-leeches," "farriers," or "cow-doctors," who generally, in combination

with some other calling, ministered to the ailments of the domestic animals. These men received no particular training for the calling that they followed. They were lamentably ignorant of the nature of the diseases that came before them, and their methods of treatment were dictated by a blind empiricism, or by a still blinder superstition.

It need not be doubted that, even at that time, there existed among stock-owners a desire to have their sick animals rationally treated by men specially educated for the purpose, and it became the early ambition of Professor Dick to supply the want. With this object he attended the classes of the Medical and Surgical Schools of Edinburgh, and in the years 1817 and 1818 he studied at the London Veterinary College ; obtaining in the latter year the certificate which that school was in the habit of granting to its pupils. On his return to Edinburgh he engaged in the practice of his profession, and began to give short courses of lectures on veterinary subjects. In the spring of 1823, he was fortunate enough to have his efforts brought under the notice of the Highland and Agricultural Society by Mr. Johnston, a merchant of this city. A committee was forthwith appointed to promote veterinary education, and in the same year Professor Dick's school was formally opened, under the auspices of the Society. The entire course consisted of forty-six lectures. The number of students was twenty-five, and each of them paid the moderate sum of two guineas.

On an occasion like this, one might be pardoned for dwelling at length on the development of veterinary education, and on the consequent rise of the profession during the last half-century. At the present time, however, there is perhaps a dangerous proneness to estimate our position by looking back along the way that we have come, rather than by looking forward in the direction in which we ought to advance. Indeed, in many quarters there is not only a tendency to magnify the progress that our profession has made, but there is even a serious misconception as to wherein true progress consists. Constant complaint is heard that, as a profession, we are not accorded that place in the public estimation to which we are justly entitled, and many talk as if our position could be made better by Acts of Parliament and things of that nature. The complaint is probably unfounded. It must be confessed that we are yet far from occupying that position in the public regard which it is our ambition to attain to ; but it will be wholesome for us to accept the public estimate as the just one, and to set ourselves to find out how our claims to a higher position may be enhanced.

Our title to a higher place must rest on an increased knowledge of the diseases affecting the domestic animals, and on an increased power to cure or to prevent these diseases. And if we accept that as a definition of genuine progress, we must humbly confess that though our march may have been steady, it has been very slow. We cannot institute a comparison between the veterinary literature of to-day and that of the beginning of the century, because at the latter date there did not exist any literature worthy of the name. But even yet, veterinary literature is scanty, and what is of it is not wholly divested of superstition. Will it be believed that there is hardly an important disease peculiar to the domestic animals the pathology of which is fully and accurately known? Such, however, is the case, and most of the exceptions are diseases where our knowledge has been increased by investigators outside our own profession. It is true that, for most of the diseases, there has been framed some sort of a pathology, which, however, is at the best merely provisional, and to be retained only till minute investigation and extended observation shall have furnished us with the evidence necessary for trustworthy conclusions. It is along this line of uninvestigated diseases that our forces are to be marshalled and the battle fought. That but little of this work has yet been done, is because the individual members

of our profession have not had that scientific training which is necessary to fit them for the task, and progress will be made possible only by the proper education of the veterinary student. It is the character of the units of the profession that determines the character of the profession as a body. The average veterinary practitioner at any particular period reflects the state of veterinary education at the time when he graduated. The quality and extent of the teaching afforded by the schools is thus of paramount importance, and whatever progress we have made, and are still making as a profession, may be traced to the development of veterinary education.

(*To be continued.*)

Notes and News.

MEDICATED MOSS-PEAT POWDER.—Dr. Neuberg has recently introduced in the clinic of Professor Esmarch, of Kiel, a method of wound dressing to which he was led in the following way :—Two years ago a labourer one day appeared who had sustained a compound fracture of both bones of the forearm eight or ten days previously, with considerable laceration. He had got a comrade to surround the whole forearm at once with a thick paste of peat mould, on which was laid a rough splint of wood. When he came to the clinic he was in good general health, and on clearing off the mould the wound was found to be healing beautifully, without any sign of suppuration. A Listerian dressing was applied, and the limb better fixed, and the man made a good recovery. Dr. Neuberg was led to investigate the properties of peat mould with reference to wound-dressing, and he found that the dust resulting from the manufacture of blocks of peat with the circular saw (as carried on in Schleswig-Holstein), and which is very light in weight and in colour, has a powerful affinity for ammonia, carbonate of ammonia, and bad-smelling materials generally, and takes up nine times its own weight of water. For dressing wounds, Dr. Neuberg now uses two bags of gauze (one double the other in size) wrung out in carbolic solution and filled with mould, the mould in the smaller bag containing two and a half per cent. of iodoform, that in the larger saturated with five per cent. carbolic solution. The smaller bag is placed on the wound directly after disinfection of the latter with carbolic solution, zinc chloride, or iodoform, and the larger bag is placed above, the whole being kept in place by a gauze bandage. The dressing remains on mostly a fortnight or more. Excellent results have been thus obtained. The advantages claimed for the method are these :—1. A given quantity of the mould takes up more fluid than jute, gauze, or cotton wool. If it be slightly moistened its absorbent power is increased. 2. It has great power of absorbing products of decomposition of organic substances, and hence prevents these occurring. 3. The moistened mould is a very soft, but still elastic substance, and so is easily placed in the required position in the bags before applying them to the inequalities of the body. 4. It is the cheapest of known antiseptic dressings, one pennyworth being sufficient for one dressing, and still less if the preparation with an antiseptic be left out. 5. It makes a very suitable pad for all purposes when enclosed in gauze.

Correspondence, etc.

THE BOARD OF EXAMINERS.

SIR,—Now that the present members of Council have elected the Board of Examiners, perhaps you will kindly allow me space for a few lines as to the result of their labours, as I presume it is competent for a member of a corporate body to comment on the proceedings of its Council.

The office of examiner is most important. The examiners, in fact, make the profession—they determine who shall and who shall not be its members.

I. The Royal College of Veterinary Surgeons is the "body corporate" of the United Kingdom. It professes to regard with equal favour the veterinary surgeons of England, of Scotland, and of Ireland. Good men there are in each country, while diversities of opinion and different modes of practice prevail. One would therefore naturally have thought that the Council would have chosen a few of the very best of these men from the three divisions of the kingdom, and formed a National Examining Board worthy of the name. No. Eight or nine gentlemen resident in London, one in Manchester, and the others in English counties, are now the sole members of the Examining Board. When a Scotchman goes south of the Tweed, or an Irishman crosses the Channel, and thinks as his English friends think, and does as they do, his nationality is little more than a name. The Examining Board of the Royal College of Veterinary Surgeons is therefore now—deny it who may—an English-London Board; there is not a true representative Scotch or Irish practitioner on it.

II. Now, more than ever, we have need of good examiners. The colleges swarm with students; year by year their number is increasing. At the examining table the interests of the profession and those of the professors and teachers are not always alike. The prosperity of the schools and the success of their teaching depend greatly on the number of students who pass, and the marks of the Examining Board. Gentlemen who have resigned, or been obliged to resign, their appointments in teaching institutions can scarcely fail to have some feeling towards their late college and colleagues. Their personal acquaintance, too, with the students and the students' parents or friends, may be inconveniently great, and one would have thought that the members of Council in their elections would have avoided such gentlemen. Instead of that, of four examiners in horse and cattle practice (Final Examination), two are ex-professors of London colleges, while comparative anatomy and chemistry in Scotland are confided to the care of a gentleman who for years was one of the supports of one of the Scotch schools. Do the members of the profession—in its interest and their own—wish ex-professors and kind, gentlemanly men as examiners? Or men who are not only without suspicion, but above it—men who will show much kindness but no great favour, passing 100 students if they deserve it, or relegating 50 per cent. to their studies if otherwise?

III. The veterinary editor of an agricultural paper does generally no great good to his profession or professional brethren. One would scarcely have expected to find the veterinary or ex-veterinary editor of a leading Scotch agricultural newspaper on the Examining Board of the Royal College of Veterinary Surgeons. No one can possibly respect and admire that gentleman more than I do, for his many *other* good qualities, and seeing that these have gained him a seat on the Board, we trust that he will now—why not before?—scorn to be the veterinary editor of an agricultural journal.

IV. On the diplomas of students examined in London will be inscribed the names of Professor Voelcker and Dr. Burdon-Sanderson; on those of Edinburgh and Glasgow, Mr. Vaughan and Mr. W. A. Taylor, Manchester. When

such eminent men were re-elected for London, could not Professor Crum-Brown and Professor Turner have been retained for Scotland? I am not one of those who think that veterinary surgeons cannot examine veterinary students, even in such subjects as botany, chemistry, and physiology. From the *Scotsman* of last week, I find that Professor McCall thinks the "number of such men is small;" and Professor McFadyean says that the "appointment of veterinary surgeons as examiners in them has destroyed the complete confidence which previously inspired teachers and students in the Examining Board." The humility and diffidence of these talented professors is scarcely worth notice. They may rest assured that veterinary surgeons—especially when appointed for five years—will always be found fit to examine the students of the Glasgow and Edinburgh Colleges in any subject. A few bright, clever young fellows, and some earnest, hard-working students there are each year among them; on the others there is room for improvement. At the same time, I cannot but sympathise with the professors when the successors of Professors Crum-Brown and Turner are an ex-lecturer from a rival school, and a young Manchester gentleman, whose name in connection with physiology has never—to my knowledge—been heard of.

V. If I had the honour of being an examiner in Horse or Cattle practice, and a student were to tell me that he would use as many drugs as some practitioners use, that his shelves would groan under a load of bottles, and "drinks," and balls, that daily and almost hourly doses would be his rule, and hand me a certificate condemning a horse for every trifling ailment or blemish—with or without the real cause of unsoundness inscribed thereon—I candidly confess *I would reject that student.* Such things may suit other parts: we don't wish them here; and where is our examiner to prevent it? Errors there are, doubtless, in Scotch practice; they are well provided against. When a Scotch veterinary surgeon's son or pupil comes up and gives his father or master's views and opinions, and their plain, simple, but right treatment, will his English examiners understand him? Three Englishmen and London-Scotchmen—sole examiners in horse and cattle practice for Great Britain and Ireland—two of them ex-professors! It is sickening to think of it.

The London-English "bacterium" always present in the R.C.V.S. is again showing signs of active development. Will a few further "cultivations" once more produce "attenuation, degeneration," and disorganisation? I, for one, have gradually returned to my old way of thinking. I am prouder than ever of being a Highland Society man. Three or four years ago, when a few of the examiners in the Society's Hall introduced the subject, and paved the way for our own annihilation as examiners, and the commencement of the arrangement between the Society and the R.C.V.S.—the credit of that arrangement being primarily due to Mr. Tom Taylor, of Manchester—I thought then we did right. I fear now, after the appointment of these English and London-Scotch Examiners, that we did wrong. The last Board of the Society, as a whole, was a much better one for Scotland than the one the Council has now palmed on us. The Council, in my opinion, by appointing such gentlemen only, more especially in horse and cattle practice, has done great injustice both to Scotland and Ireland, and we have more need than ever for a check on them.

One or two items there are of a more pleasant nature. Your own appointment, sir, and that of Mr. Cox and some of the former members of the Board, is very satisfactory. It is strange that an ex-professor should have been preferred for anatomy in the south. My own nomination for the Scotch Board is of little importance, save in the way of very sincere thanks to some few members of Council. One remark—though foreign to the subject—you will perhaps allow me. If, sir, by your examinations you will make a certain

class of students dissect a little more, and dirty their fingers considerably more, you will confer a favour on them for which, in after years, they, I am sure, will be grateful. Book-anatomy, as you doubtless know, is too common among them ; and what will book-anatomy do for them in actual practice? A book-anatomist at an important *post-mortem* examination, or such like, is a sorry figure. This is a matter I have often spoken of.

It is pleasing, also, to find morbid anatomy and botany in the hands of veterinary surgeons ; though why a colleague should have been allotted to you in the former subject, seeing we have only two examiners in horse practice, or why a southern army veterinary surgeon should be sent to Scotland to examine in the latter, I am at a loss to know.

Bringing these desultory remarks to a close, if I am allowed any friendly suggestions in the way of making the best of matters for the ensuing five years—as I presume the appointments cannot be cancelled—they are simply :—that ex-professors will kindly at the examinations forget their colleges and friends ; that agricultural papers be set aside ; that studies in botany, chemistry and physiology for Scotland be actively prosecuted; and, above all, that the suggestion of your correspondent, Mr. Cox, in last month's issue be put in operation ; that two other practical examiners—one Scotch and one Irish—be added to the horse and cattle practice tables respectively, making, with the two English gentlemen already appointed, four examiners on each table. One great shortcoming of the Examining Board is, I think, numbers. There is such a thing as what is roughly termed, "pumping an examiner dry," and if one examiner has to examine fifty or sixty students "right away," the last students will probably have most of his questions and answers by heart, while the soundness or unsoundness of the subjects of his practical examinations will, by a process peculiar to students, be "telephoned."

I trust, sir, you will excuse my trespassing so much on your space. If, in my remarks, I have hurt any one's feelings *undeservedly*, I am sorry for it. The Council have not shown any great delicacy towards the opinions or feelings of their Scotch or Irish constituents.—I am, sir, yours very truly,

Slateford, 10*th November*, 1882. C. CUNNINGHAM.

"IS SYSTEMATIC TRADING IN HORSES COMPATIBLE WITH THE CALLING OF VETERINARY SURGERY?"

DEAR MR. EDITOR,—Under the above heading, Mr. Henry Dyer has, in your November issue, raised a question which I would rather see put,—"Is trading in horses compatible with the calling of veterinary surgery?" The difference is apparent !

I only wish that an outspoken opinion on this subject would ensure the prompt suppression of a practice which tarnishes and dishonours the fair fame of a noble profession.

If it will be any satisfaction to Mr. Dyer to know that at least one member of the profession is in sympathy with his views upon this matter, it will afford me much pleasure, through your courtesy, to give him the assurance that I heartily endorse the sentiments so ably advanced in his communication to your Journal. Only a short time ago, I took the opportunity to express to a medical friend in London, in rather round terms, my great disgust at the left-handed sort of manner in which the sister profession treat the veterinary profession as a whole. His reply, in so many words, amounted to this : that while there were many excellent and noteworthy exceptions, there was far too much of the horse-dealer about veterinary surgeons, as a class, for his profession to meet them on terms of equality ; remarking further, that it was singular that men who seemed to have most to do with the noblest of animals appeared so frequently to suffer moral degradation.

I go so far as to say, that a veterinary surgeon, if he properly estimates the value of a high standing in his profession, had far better never buy a horse for purposes of re-sale, neither as an occasional transaction, nor to oblige an influential client; and, I may add, I practise what I preach.

The Apostle Paul teaches that we should "abstain from all appearance of evil," and depend upon it this is the wisest course to adopt. Once let a veterinary surgeon deal in horses, even though it be but a single transaction, and he lays himself open to be classed as a horse-dealer immediately. Why this trade always has such an objectionable flavour about it to the refined mind, it would perhaps not be difficult to explain; but into this it is not necessary to go; we take things as we find them Apart, however, from this view of the question, it is altogether *infra dig.* for a professional man to dabble in trade; not that a tradesman may not be socially the equal of a professional man, but because it is undesirable that the mind of one whose whole time is supposed to be given up to science, should be pre-occupied with the trammels of commercial anxiety; and if a man is obliged to resort to this sort of thing in order to make a living, it is quite plain that it would be better both for himself and others if he had never entered the profession.

What with physiology, pathology, and pathogenesy, there is quite enough for the average mind to work at, if we are individually to keep abreast of the times; and to do this, it seems to me, to the best of ability, is the duty of every honest and consistent man in the profession.

I am, dear Mr. Editor, yours faithfully,

248, Upper Parliament Street, Liverpool, J. SUTCLIFFE HURNDALL.
17*th November*, 1882.

SIR,—Although not possessing the pen of a ready writer, I cannot allow Mr. Dyer's admirable letter in last month's VETERINARY JOURNAL to pass without expressing my entire concurrence with his opinions.

The subject which that gentleman has the courage to attack is, in my opinion, one which is perfectly "ripe" for the lancet of fair and open discussion; therefore no apology is necessary should the feelings of any veterinary surgeon *cum* horse-dealer be injured.

Rather let the "Amen Deum" come from those whose unprofessional actions make the remarks necessary.

The *incubus*, however, which retards the advancement in public estimation of our profession is hydra-headed. Horse-dealing is undoubtedly a prominent evil, but I venture to affirm that the custom of making *shoeing forges* almost inevitable accompaniments in the practice of a M.R.C.V.S. is not less a humiliating fact.

Any one coming from country practice (where this degrading *mesalliance* seems much seldomer contracted) to a city district will very soon find himself handicapped, unless, like his brother professionals, he lowers his *status* by becoming a master farrier and touts for shoeing.

Can anything be more incongruous (I could use a stronger expression) than the spectacle of a scientific man, a Member—aye, and very often a Fellow—of that Royal College of Veterinary Surgeons on which our Government has so recently conferred the privilege of a Penal Act, engaged in fawning upon some paltry horse-owner, or mayhap foreman, so that he may obtain the favour (and profit) of shoeing his horses?

The sign-boards of such men are a curiously correct confirmation of the *locus standi* they hold: "———, M.R.C.V.S.," and then how often is added the mystic L. Perhaps I err in thinking this superfluous, not to say stupid; as Prof. Axe informs us, students in his teaching establishment enjoy facilities for improvement all others must lack.

Then "Veterinary Surgeon" follows, to explain, I suppose, the meaning of these awful symbols. "Horses examined as to soundness." This must be an exceptional qualification, or why mention it any more than "Balls administered." "Veterinary Shoeing Forge." Does this mean that each animal sent there will be shod under the direct personal supervision of a qualified veterinary surgeon? If so, what a farce it all is! "Contracts taken for shoeing and doctoring." Save the mark! This is but a very mild and frequent example of the position we choose to occupy in the eyes of the general public.

At present it is simply nauseating to hear some of our so-called eminent city practitioners delivering their trite inflated platitudes about the advancement and improvement of our profession, whilst their names are displayed in this tradesman-like fashion over scores of forge doors.

This horse-shoeing, dealing, and jobbing must entirely cease to be carried on by the members of our profession if we desire to raise ourselves above the level of the coming licentiate.

A step in this direction would be gained were it compulsory that all Fellows should confine themselves to the practice of their *profession* only. Surely, Mr. Editor, the time has come when, with a Penal Act and an improved educational course, we should throw off these connections and prove ourselves worthy of our country and profession. EXCELSIOR.

TO CORRESPONDENTS.

A CANDIDATE.—A candidate for the Fellowship degree of the Royal College of Veterinary Surgeons must be a member, must have been in practice for five years, and must produce a certificate of competency signed by three Fellows. There is no prejudice otherwise, and acting as manager or assistant for any part or the entire five years is no obstacle.

M. R.C.V.S.—"Bursal enlargements, as windgalls, thoroughpins, and bog-spavin," do not constitute unsoundness unless disease or lameness is present. Their existence, however, should lead to a suspicion of disease, and in a warranty, or in giving an opinion, it is as well to mention their presence, even if there is no disease detectable.

A NUMBER of papers and communications pressed out of this month's Journal will appear in our next.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. A. Nunn, A.V.D., India; R. C. Trigger, Newcastle; A. H. Santy, Norwich; J. McFadyean, Edinburgh; A. Broad, London; Professor McCall, Glasgow; C. Cunningham, Slateford; Professor Tormay, Buda-Pesth; J. W. Hill, Wolverhampton; J. B. Wolstenholme, Manchester; J. T. Gregory, Southsea; W. O. Williams, Edinburgh; J. Moir, Armagh; W. Masters, Southsea; T. Cave, Nottingham; J. Cooke, Rotherham; W. Broughton, Leeds; J. S. Hurndall, Liverpool; J. J. Sperring, Dublin; "Excelsior."

BOOKS AND PAMPHLETS: *H. D. Bigelow, M.D.*, Hydrophobia; *A. Laosson*, Ueber die Geschichte und die Contagiosität der Stanpe; *E. Reichardt*, Desinfection und desinficirende Mittel; *L. V. Thanhoffer*, Ueber Zuchtlähme; *P. Salvi*, La Russie Chevaline et les courses de Résistance; *E. Semmer*, Der Milzbrand und das Milzbrandcontagium; Bulletin de la Société Centrale de Médecine Vétérinaire.

JOURNALS, etc.—*Archiv für Wissenschaftliche und Practische Thierheilkunde; Wochenschrift für Thierheilkunde und Viehzucht; Journal de Méd. Vétérinaire et de Zootechnie; Revue Vétérinaire; American Veterinary Review; Archives Vétérinaire; Recueil de Méd. Vétérinaire; Australasian Veterinary Journal; American Live Stock Journal; Echo Vétérinaire; Proceedings of the Medical Society of Kings; Annales de Méd. Vétérinaire; Live Stock Journal; Lancet; Breeder's Gazette; Nature; Clinica Veterinaira; Field, Forest, and Stream; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde.*

NEWSPAPERS.—*Freeman's Journal; Dublin Evening Mail; Lahore Civil and Military Gazette; Manchester Guardian; Scotsman; North British Agriculturist; Glasgow Herald.*

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